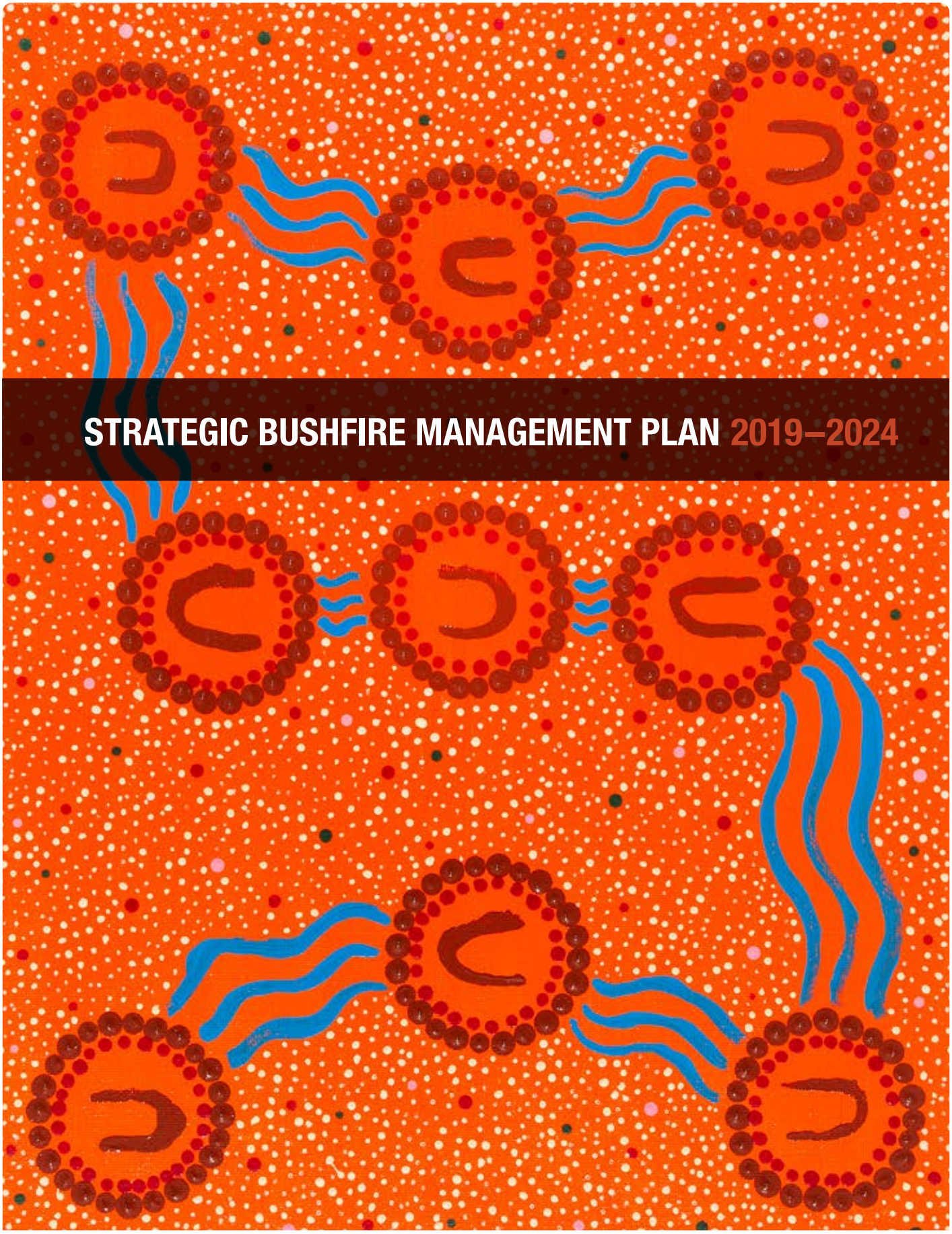
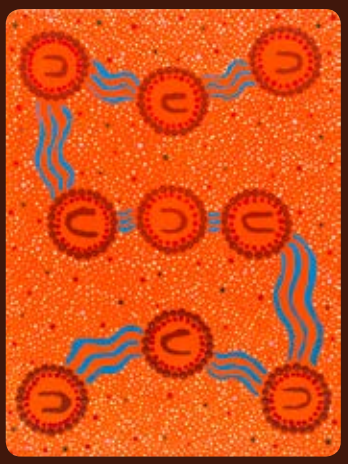


STRATEGIC BUSHFIRE MANAGEMENT PLAN 2019–2024

ACT Government

ACT Emergency Services Agency



Front cover:

Artwork by Richie Allan,
Ngunnawal Land Custodian.

Richie Allan is an Aboriginal artist born on Ngunnawal Country. He is dedicated to Country and culture, conducting cultural awareness on Country experiences for people and providing valuable local understanding and appreciation of Ngunnawal land.

Ritchie talks about the many rich and varied sacred sites, places of significance, song lines and stories that exist in the place we call Canberra. He speaks of needing to understand the land, valuing and working with the information nature provides us to protect the community.

Ritchie's artwork depicts the nine brigades of the ACT Rural Fire Service, connected by water holes with a Ngunnawal warrior protecting the area. The inner circles represent the members of the community that form the brigades, with the outer circles representing the broader community from where the brigade members come from.

The outer design represents the local ACT landscape, the fauna, flora and the land. It depicts the important connection to Country and the significance of caring for the land. The vivid orange background represents fire in the landscape, acknowledging that fire is part of the healing process of the land and essential to keep the environment in balance.

Commissioner
Emergency Services Agency
ACT Government,
GPO Box 158
Canberra City ACT 2601.

Strategic direction and advice through the Bushfire Management Plan Steering Committee: G Whelan, (Chair, Emergency Services Commissioner) D Lane (former Emergency Services Commissioner), T Allen, M Brown, N Cooper, K Eyles, C Henderson, D Iglesias, M Kitchin, A Mitchell, J Murphy, H Oakey, B Pacey, S Ryan, G Sandeman, I Walker, J Wheatley

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CONTENTS

We speak to Country,
we sing to Country,
we belong to Country.

UNITED NGUNNAWAL ELDERS COUNCIL FOREWORD

The land has significant value to Aboriginal and Torres Strait Islander peoples. Every aspect of our lives is connected to country—spirituality, culture, ceremony, language, identity.

We speak to Country, we sing to Country, we belong to Country.

Fire is part of how we look after Country by cultural burnings to refresh Country, pave the way for new life to thrive and minimise the threat of bush fires.

It is a relationship between people and the land that sustains us and we must respect this relationship by caring for Country.

Traditional caring for Country and looking after land can be carried out alongside modern fire practices, given we continue to share knowledge and promote ecological benefits to land.

Despite all we do to manage and protect the land—sometimes bushfires happen.

We acknowledge, appreciate and respect the effort of those brave warriors involved in fighting bushfires to care for and protect the community.

Since the catastrophic bushfires of January 2003, the ACT Government and community have been proactive in implementing plans to provide increased protection against bushfires for the people, property and the environment of the ACT.

MINISTER'S FOREWORD

Since the catastrophic bushfires of January 2003, the ACT Government and community have been proactive in implementing plans to provide increased protection against bushfires for the people, property and the environment of the ACT. For the past 15 years, under the *Emergencies Act 2004,* the ACT Emergency Services Agency (ESA) has successfully delivered three Strategic Bushfire Management Plans (SBMPs), each spanning five years.

The first SBMP, issued in January 2005, captured the key recommendations of the McLeod Inquiry into the 2003 Canberra bushfires. It introduced practices in urban planning, incident management, community education and fuel reduction through land management. The 15 years of the SBMP reflect significant improvements in bushfire prevention, bushfire fighting capacity and capability, and increased community engagement and education.

Version 4 of the SBMP draws on continuing research into fire management, bushfire behaviour, the effects of climate change and seasonal weather, the important role of community, lessons learned nationally and internationally, and feedback from the community.

SBMPv4 contains actions to continue to mitigate the risk of bushfires in the ACT for the next five years. To achieve this, it sets objectives and actions for agency and community preparation and response for bushfires, bushfire hazard assessment and risk analysis, bushfire prevention, and adaptive management to apply best practice to bushfire management and prevention practices in the ACT in a changing environment.

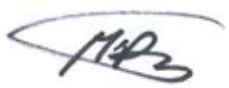
The plan builds on the achievements of the last 15 years and feedback on the effectiveness of the objectives and actions in previous plans. It emphasises the factors expected to have increasing significance in the ACT over the life of the plan. These include the particular importance of community, bushfire recovery, impacts of climate change, use of technology for fire management, and support for ongoing connection to the land by traditional custodians to meet a range of cultural land management objectives.

For thousands of years, Ngunnawal Peoples, the traditional custodians of ACT land, have practiced sustainable land management. SBMPv4 combines those traditional methods with contemporary practices to achieve the best results for the environment and the community.

The safety of the community is central to the SBMPv4. SBMPv4 addresses this by providing effective community information and warnings, and delivering programs to ensure that the ACT community is educated about bushfire risk, is equipped with a bushfire survival plan and will be supported if affected by bushfire.

I acknowledge the work of the ACT Bushfire Council, their continuing advice to the ESA as community representatives and the Council's role in assisting the Commissioner to monitor SBMP scope and effectiveness. I also appreciate the work of the numerous community groups, organisations and individuals who contributed to the development of this plan, either by attending one of the many consultation forums or providing feedback.

I am confident this SBMPv4 will serve the needs of the community well for the next five years of strategic bushfire management in the ACT.



Mick Gentleman MLA
Minister for Police and Emergency Services

15 YEARS OF STRATEGIC BUSHFIRE MANAGEMENT

2003 CANBERRA BUSHFIRES

2003
1 AUGUST
McLeod Inquiry into the Operational Response to the January 2003 Bushfires in the ACT

2004
1 JULY
ESA established (Emergency Services Authority)

2005
JANUARY
SBMP V1 published

2005–2009
Review of effectiveness of SBMP V1

2006
Formation of Emergency Services Agency (ESA) within JACS

2006
19 DECEMBER
The Canberra Firestorm–Coronial

2009
JAN–FEB
Victorian Bushfires Inquest into the 2003 Canberra Bushfires

2009
Interim findings of the 2009 Victorian Bushfires

National Framework for Scaled Bushfire Advice and Bushfire Warnings to the Community Royal Commission

2009
OCTOBER
SBMP V2 published

2009–2014
Review of effectiveness of SBMP V2

SBMP V1

SBMPV1

SBMPV2

To minimise the likelihood of bushfires and their negative consequences. SBMPV1 captured key recommendations from the McLeod Inquiry and established firm foundations for significantly increased fuel hazard reduction management programs. It established practices for use of plant, aircraft, RAFT, urban planning and incident management, and focussed on community education.

SBMP V1 ACHIEVEMENTS

- Defined Bushfire Abatement Zones
- Developed Evacuation Guidelines
- Distributed *Bushfires and the Bush Capital Guide* as an insert in *The Canberra Times*
- Improved bushfire response, through training and application of AIIMS
- Obtained capital funding for infrastructure and provision for heavy plant and aircraft for fire suppression
- Developed improved capability, including the use of fast attack plant, aircraft and remote area fire fighters
- Implemented Bushfire Operational Plans (BOPs)
- Conducted community awareness and education programs, including the development of Farm FireWise
- Conducted capability assessments and training needs analysis for the ACT Rural Fire Service
- Delivered significant changes in urban planning and design, including the establishment of partnerships and shared responsibilities between the community, land managers, planning authorities and the ESA.

SBMP V2

Working together to suppress bushfires and reduce their consequences on human life, property and the environment. A framework for Government and community to work together, it identified clear policies and standards for land managers. It provided information for the community to better understand bushfires and fire management and to assist them in preparing themselves and their properties.

SBMP V2 ACHIEVEMENTS

- Developed detailed plans (RFMP) to manage and increase the extent of prescribed burning in the ACT to reduce fuel hazards
- Defined and mapped bushfire zones
- Defined clear policies and standards for the activities to be undertaken by land managers in the ACT
- Developed a framework by which the different agencies work together, particularly in large scale and protracted bushfire incidents
- Upgraded and enhanced equipment, including the Territory Radio Network and placed mobile data terminals in all fire fighting appliances
- Increased personnel and volunteer members and established Remote Area Fire Teams, Community Fire Units and the Mapping and Planning Support Group
- Adopted the *National Framework for Bushfire* Scaled Advice and Warnings to the Community
- Targeted education and awareness programs to better inform the community about critical actions to be taken before, during and after bushfires
- Enabled timely emergency alerts through mobile phones and the media
- Strong engagement with rural landholders regarding fire management on their land
- Introduced broad area hazard reduction in national parks and nature reserves
- Improved operational doctrine across services with the development and implementation of the *Concept of operations for bush and grass fires in the ACT.*

2009–14
Ongoing research and modelling on bushfire management, technology and methods, weather, climate and the environment

2009–14
Technological improvements in communications and public access

Detailed mapping of fire zones—BPAs, BAZs, SFAZs and APZs

2010
Victorian Bushfires Royal Commission Report

2013
Performance Audit into Bushfire Preparedness (Report No. 5/2013) ACT Auditor-General

2014
Legislation to clarify the Commissioner's functions, powers and responsibilities

SEPTEMBER
SBMP V3 published

2019 SBMP v4

SBMP V3

SBMP V3 builds and strengthens the objectives of SBMP V2. With a focus on bushfire management planning and preparedness, the importance of community engagement is strengthened while emergency services and fire managers applied improved methods, technology and knowledge for bushfire planning and management.

SBMP V3 ACHIEVEMENTS

- Updated the ACT Farm FireWise program to ensure consistency with Land Management Agreements and continuing to support the rural community
- Developed and reviewed Bushfire Operational Plans (BOPs) for key areas of the Territory for government and non-government lands
- Engaged with representatives from the community, such as the ACT Bushfire Council in their role of monitoring the Plan's scope and effectiveness
- Developed the Strategic Bushfire Capability Framework to provide assurance on the ACT's bushfire response capability
- Established Incident Management Team (IMT) capability with qualified, experienced personnel and upgraded incident management facilities
- Delivered the *Living on the Edge and Canberra be Bushfire Ready* engagement campaigns and community education through open days, doorknocking and public events
- Conducted reviews of fuel hazard build-ups, and measured and tracked changes in vegetation
- Reviewed the ACT Elevated Bushfire Danger Plan
- Developed and maintained maps of the ACT's Bushfire Prone Areas (BPA)
- Updated the policy for applying bushfire-related construction standards for dwellings in the BPA
- Used the National Bushfire Mitigation Program to support bushfire management activities for farmers
- Taken a whole-of Government approach to completing BOP activities to reduce bushfire fuel loads by conducting large-area prescribed burns, asset protection activities, and providing an extensive fire trail access network
- Supported ongoing research in bushfire modelling and management through organisations such as BNHCRC
- Participated in and supported AFAC policy development
- Implemented the Fire Management Plan for the Lower Cotter catchment to protect the Cotter Dam water supply
- Worked with utility providers to reduce bushfire risk near power lines across the ACT
- Enhanced our aerial firefighting capability through facilities to support large aerial tanker aircraft
- Enhanced our Remote Area Firefighting Team (RAFT) capability
- Implemented a Specialist Intelligence Gathering (SIG) helicopter that hosts a high resolution camera to obtain real-time data from fire grounds and detect new fires
- Conducted campaigns to recruit and retain volunteers
- Developed tools to deploy resources, including Computer Aided Dispatch, the RFS readiness matrix and the Dynamic Coverage Tool
- Signed an agreement with NSW for collaborative cross-border planning and response
- Reviewed the agreement with ACT Policing for arson investigation
- Installed electronic Fire Danger road signs
- Developed the *Bush and Grass Fire Warnings and Public Information Protocol*
- Amended the *Emergencies Act 2004* to clarify the roles of fire services and improve their operational coordination
- Amended the *Emergencies Act 2004* to simplify the Farm FireWise program and Land Management Agreements

SBMPV3

Factors expected to play an increasing role in bushfire risk management in the ACT over the next five years of the plan:

the important role of the ACT community

the use of technology and data in bushfire management

adaptive management for climate change

recognising the culture of Aboriginal and Torres Strait Islander people

bushfire and community recovery

INTRODUCTION

Purpose of the SBMP

The Strategic Bushfire Management Plan (SBMP) is the overarching document that directs all levels of bushfire planning in the ACT. Its purpose is to provide a strategic framework to protect the ACT community from bushfires and reduce resulting harm to the physical, social, cultural and economic environment of the Territory.

To achieve this, the SBMP sets objectives and actions for:

- agency and community preparation and response for bushfires
- bushfire hazard assessment and risk analysis
- bushfire prevention, including hazard reduction
- adaptive management to apply best practice to bushfire management and prevention practices in the ACT in a changing environment.

Understanding this plan

The SBMP is a requirement of the Emergencies Act. Its contents are defined within the Act.

Part A of the SBMP provides the background and sets the context for fire management in the ACT. It describes the bushfire environment and how the ACT assesses risk factors and manages bushfire risk.

Part B of the SBMP contains the objectives and actions. It details the current and ongoing management strategies that inform the actions that apply to each objective.

Some of these actions have become 'business as usual' through the implementation of previous SBMPs. They are included in this version to ensure visibility of ongoing activities to reduce bushfire risk in the ACT.

Other actions are new or have been modified to reflect current best practice in bushfire management.

Preparation of this plan took into account the factors expected to play an increasing role in bushfire risk management in the ACT over the next five years of the plan.

These are:

- the important role of the ACT community
- the use of technology and data in bushfire management
- adaptive management for climate change
- recognising the culture of Aboriginal and Torres Strait Islander people
- bushfire and community recovery.

Monitoring and reporting

The SBMP will have a governance plan that will enable the effective oversight of the delivery of the SBMP, ensuring strategies are implemented and actions achieved. A range of existing data sets and performance indicators will be used to measure the effectiveness of the SBMP.

Regular monitoring and reporting on these indicators will encourage ongoing performance improvement and innovation consistent with adaptive management practices.

Resources needed to meet SBMP objectives

Implementing the SBMP's objectives will require the resources and commitment of the ESA and the ACT Environment Planning and Sustainable Development Directorate (EPSDD) staff and volunteers, in collaboration with other ACT directorates and the community.

The resources required to implement actions will vary every year, reflecting seasonal and operational priorities. They may also change over the life of the SBMP to reflect changes in the ACT's risk profile.

It is expected that the SBMP's objectives can be delivered within existing resources under the *ACT Strategic Bushfire Capability Framework.* However, given the long-term nature of the SBMP, additional funding may be required. This would need to be considered within the whole-of-government budgetary framework.

PART A:

CONTEXT AND RISK MANAGEMENT

The 2002/03 bushfire remains the most destructive bushfire on record in the ACT

4

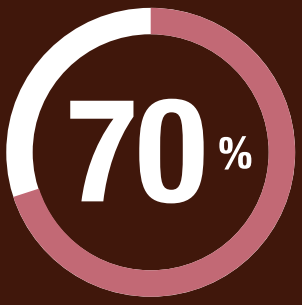
PEOPLE DIED

435+

PEOPLE INJURED

487

HOUSES DESTROYED



OF THE ACT FIRE AFFECTED

THE BUSHFIRE ENVIRONMENT

Bushfires in the ACT

Bushfires have long been a part of the ACT landscape. Flammable vegetation, long hot summers and periodic drought have regularly combined to produce bushfires of varying size and intensity. In the millennia before European settlement, Aboriginal and Torres Strait Islander people developed a sophisticated understanding and use of fire to manage land and resources and reduce bushfire risk.

Record keeping since European settlement shows that the ACT has experienced severe bushfires at irregular intervals—1919–20, 1925–26, 1938–39, 1951–52, 1978–79, 1982–83, 1984–85, 2000–01 and 2002–03. The 2002-3 bushfire remains the most destructive on record in the ACT. Four people died, more than 435 were injured, 487 houses were destroyed and approximately 70 per cent of the ACT fire-affected.

The 2003 bushfire had a profound impact on the Territory and its residents and led to a fundamental shift in bushfire management. This included the passage of the Emergencies Act, and the creation of the ESA, Australia's first unified emergency agency.

RECENT BUSHFIRE TRENDS

For the past 10 years, data shows that, on average, the ACT has 221 bushfires per year (Figure 1). This has been relatively consistent except for 2009 when 337 bushfires were recorded.

The vast majority of these bushfires were contained to less than 1 hectare in size. They occurred on the urban fringe, where the fire services had rapid access to them. Community vigilance and prompt reporting allowed for rapid responses before the bushfires could spread.

Causes of bushfires

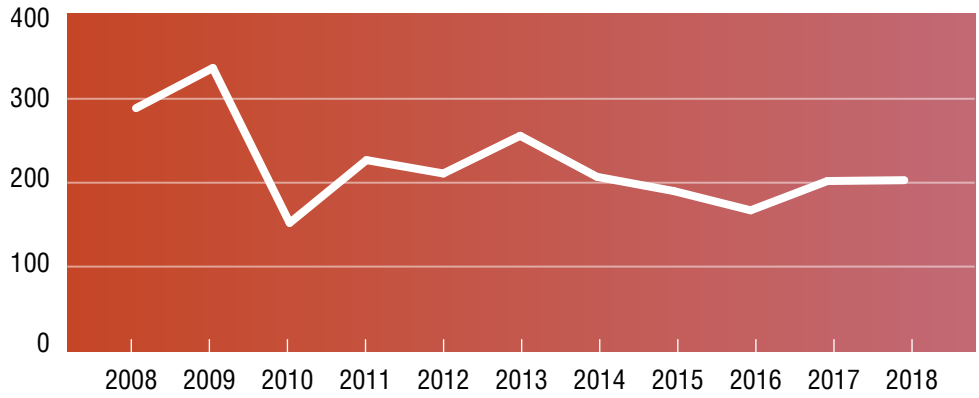
Bushfires are started by natural or human causes.

Most are caused by humans through arson or carelessness. The significant number of bushfires started by arson highlights the importance of the ACT Government's and ACT Policing's ongoing arson reduction programs. It also reinforces the important role that the ACT community can play in reporting suspicious behaviour, particularly on days of elevated fire danger conditions.

Lightning ignition is the most common natural cause of bushfires but accounts for fewer than 5 per cent of all bushfires in the ACT since 2004. However, because these bushfires usually occur in remote locations, they are harder to detect and access and have historically burnt the largest area.

By comparison, most human-caused bushfires occur in or near the built-up area of Canberra and are more easily and quickly controlled.

Figure 1: Bushfires per year in the ACT from 2008 to 2018



Bushfire fuels are a key factor in assessing bushfire risk. While all vegetation can provide fuel for a bushfire, different types of vegetation burn differently with different rates of spread and burning intensity.

Bushfire risk in the ACT

Any analysis of bushfire risk must consider the impact of bushfire on assets and the factors that influence how they start and spread.

VEGETATION AND BUSHFIRE FUELS

Bushfire fuels are a key factor in assessing bushfire risk. While all vegetation can provide fuel for a bushfire, different types burn differently with different rates of spread and burning intensity. Fine fuels, such as grasses, leaf litter and small twigs, for example, burn quickly, allowing the fire to spread. Heavier fuels, such as stumps or trees, create more heat when burnt and contribute to flame depth and latency. Fuel loads accumulate at different rates depending on vegetation type.

The ACT has a wide variety of vegetation types, often in close or overlapping proximity. These range from grasslands, dry and wet forests, and woodlands, through to pine forests, bogs and fens. Vegetation can also have a significant impact on fire behaviour in urban areas, with suburban fuels, including landscaping and garden beds, a key contributor to bushfires encroaching into urban areas.

Among all bushfire risk factors, vegetation is unique in that it can be directly managed before a bushfire occurs. Prescribed burning (also called hazard reduction burning) can effectively modify the intensity, flame height and rate of spread of subsequent bushfires, assisting with suppression, and reducing the risk they pose.

The dryness of the vegetation (fuel) is also important. The drier the vegetation, the easier it is for it to burn. Dryness is combined with weather variables to produce a Fire Danger Index.

While vegetation is defined as bushfire fuel for the purposes of bushfire management, some vegetation has other intrinsic values and can be regarded as an asset to be protected from bushfires. These include vegetation underpinning local ecosystems, Namadgi National Park, nature reserves, National Arboretum, Ngunnawal Bush Healing Farm, ACT pine plantations and fodder grown for livestock.

THE ROLE OF WEATHER

Along with vegetation, weather is a critical factor in determining bushfire risk in the ACT. A number of weather elements determine this risk, including temperature, wind speed, relative humidity and rainfall. Each element impacts on risk in a different way while all combine and interact to influence bushfire risk.

Temperature

Temperature affects ignition of fires and their spread. Vegetation is exposed to radiant heat from the sun, which heats and dries potential fuels, meaning less heat is required to ignite them. This drying effect also assists the rate a fire spreads, as less heat energy is used by the fire to raise nearby fuel to its ignition temperature.

The important role of temperature in bushfire threat planning is reflected in the Emergencies Act. Typically, the ACT bushfire season occurs from the beginning of October in one year until the end of March the next year. The ESA Commissioner has the authority to alter the beginning or end of the bushfire season if circumstances warrant. The Commissioner exercised this power in the 2018–19 bushfire season, which began one month earlier, on 1 September 2018, and ended one month later, on 30 April 2019.

Typically the ACT bushfire season occurs from the beginning of October until the end of March the following year.

Fire services also use the impact of temperature on fire risk to plan for bushfire preparedness. Additional restrictions on the use of fire apply during the bushfire season. At a more practical level, stand-up arrangements for fire crews are concentrated around the afternoon when temperatures are hotter and risk increases.

Wind

Wind increases evaporation, thereby reducing fuel moisture levels. More importantly, wind spreads bushfires. The stronger the wind, the faster the fire spreads. Wind also influences the spread of embers, which can play a key role in spreading the fire and are a significant contributor to asset loss.

Days of elevated fire danger conditions are increasing in line with the ACT's changing climate

HISTORICALLY THEY AVERAGE LESS THAN THREE DAYS A YEAR, USUALLY IN JANUARY.

Bureau of Meteorology data shows that on most days with elevated fire danger conditions, the winds in the ACT come from the north and west. Fire agencies use this information to concentrate preparedness activities on the western urban edge of Canberra. Appropriate protection is also afforded to the south and east regions as winds can and do blow from that direction on days of elevated fire danger conditions.

Changes in wind speed and direction can have a large impact on the size of a bushfire, the rate it spreads and the suppression response required. The danger posed by wind changes was evident in three of the most deadly bushfires in Australian recorded history—Black Friday (Victoria, 1930), Ash Wednesday (Victoria and South Australia, 1983) and Black Saturday (Victoria, 2009). Each of those bushfires was affected by a rapid change in wind conditions.

Relative Humidity

Relative humidity affects the moisture content of bushfire fuels. The lower the relative humidity, the more readily a bushfire will start, and the more intensely it will burn. Relative humidity is directly influenced by temperature. In the ACT, relative humidity is lowest in the afternoon. Relative humidity is assessed to determine the Fire Danger Index and whether to proceed with prescribed burns.

Precipitation

Rainfall (precipitation) increases moisture content on the ground and in bushfire fuels, reducing the likelihood of fires starting and their rate of spread.

Long-term rainfall averages show that rainfall in the ACT is relatively evenly distributed throughout the year, although it may vary widely year-on-year.

Historically, more rainfall occurs in late spring to summer. Spring and summer rainfall plays an important role in increasing moisture content in the region's vegetation, reducing the likelihood and severity of bushfires.

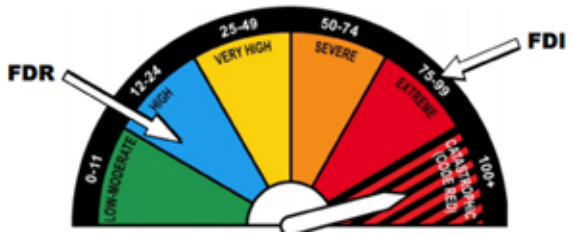
Climate projections show that future spring rainfalls are likely to decrease, and drought periods are expected to increase. The implications of this are discussed more broadly in *Future Challenges: A changing climate*.

Fire danger index and fire danger rating

The combination of air temperature, relative humidity, wind speed, long and short-term drought effects and soil moisture levels determines the Fire Danger Index.

This index expresses a bushfire's potential rate of spread, intensity and the effort required to suppress it. An index of 1 means a fire will not burn, or will burn so slowly that control presents little difficulty. An index of 100 describes fires that have the potential to burn so fast and hot that control is virtually impossible.

The Fire Danger Index is used to determine the Fire Danger Rating, which indicates the possible consequences of a fire if one starts.



Elevated fire danger conditions (severe, extreme or catastrophic) occur when the Fire Danger Index is greater than 50. At those levels, bushfires are unpredictable, fast moving and difficult to control, if not uncontrollable. Flames are likely to reach tree tops and be higher than rooftops. Embers are blown several kilometres ahead of the main bushfire.

Days of elevated fire danger conditions are not common in the ACT. Historically they average less than three days a year, usually in January.

However, this average is increasing in line with the ACT's changing climate. Research by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Bureau of Meteorology indicates that southeast Australia will see an increase in the number of high fire weather days and a longer bushfire season.[1] This change, and the increased maximum and average temperatures associated with the ACT's changing climate pose particular challenges in addressing the bushfire risk in the Territory. This is detailed in *Future challenges: A changing climate.*

PUBLIC/PRIVATE ASSETS VULNERABLE TO BUSHFIRES

Assets are considered in the context of the monetary, ecological, cultural, historic and/or community values they possess.

As Australia's national capital, the ACT has many assets with national heritage, cultural and historic value, including buildings, institutions and landscapes.

The ACT Government maintains detailed data on assets, including privately owned ones, for planning and response purposes, although details may not be released publicly because of commercial and privacy concerns. Key assets include:

Property

All properties (urban and rural) in the ACT, particularly those located in the Bushfire Prone Area (BPA), are key assets at risk from bushfire. According to the criteria set out in applicable Australian Standards, these properties are at higher risk of being impacted by bushfire. Bushfires may impact on properties not within the BPA, which means all property owners and residents should be aware of the measures they can take to mitigate the risk posed by bushfires, regardless of location.

Critical and social infrastructure

Critical and social infrastructure refers to the physical facilities, supply chains, information technology, communication networks and utilities the ACT community relies upon. Assigning precise consequences to such infrastructure is difficult and extremely varied because each category may impact on another (for example, a power outage may affect communications).

Historically, more rainfall occurs in late spring to summer

1 CSIRO and BOM, *State of the Climate 2018.*

Critical and social infrastructure in the BPA of the ACT includes:

- electrical—substations and power distribution hardware (power lines and transmission lines)
- solar generation
- gas lines and distribution stations
- water and sewerage dams, mains, pumping stations, water treatment plants, valves, reservoirs, mains water, sewer vents and wastewater treatment plants
- communication towers and mobile phone towers
- Canberra airport, light rail and major road links
- hospitals and medical facilities
- preschool, primary, secondary and tertiary institutions
- community homes, supported housing and aged care facilities
- supermarkets and petrol stations
- police, fire, ambulance, and State Emergency Service stations.

Business—Services and Industry

Businesses of all sizes may be significantly impacted by bushfires, either directly through the destruction of assets, or indirectly through impacts on their inventory, supply chains, customer base or employees.

Business—Agricultural Production

The Territory is home to agricultural production enterprises operated by rural landholders and the ACT Government. These include:

- broad acre grazing by sheep and cattle
- small cropping
- intensively managed grazing by sheep, cattle and horses
- intensive horticulture, including olive groves, truffle farms and vineyards
- plantation forestry.

The infrastructure (for example, fencing, irrigation and utilities) that supports these activities, along with their vegetation (for example, improved and natural pasture, crops and plantations) may be affected by bushfires.

Water catchments

Consistent with the objects of the *Water Resources Act 2007*, the Territory's water catchments are considered critical assets. High-intensity bushfires over a significant area of the ACT's water catchments present the most significant risk to water quality and quantity.

Biodiversity—Threatened Species and Communities

Over 70% of the Territory is land reserved for environmental and biodiversity protection. This includes sites where concentrations of threatened species or environments are vulnerable to bushfire. Frequent high intensity fire can reduce and homogenise biodiversity, favouring species that thrive under frequent burning at the cost of those that are more fire sensitive.

Bushfire operational plans (BOPs) identify and protect these sites from bushfire risks.

Cultural Heritage

Under the *Heritage Act 2004*, the ACT Heritage Council is responsible for keeping a register of heritage places and objects in the Territory. This is available to emergency services for planning and operational purposes and informs the development of BOPs for those properties.

Cultural Heritage of Aboriginal and Torres Strait Islander People

The ACT Government recognises that the land known as the ACT has been occupied, used and enjoyed for millennia by Aboriginal and Torres Strait Islander people in accordance with their traditions. Many cultural and heritage assets are important to members of this community in the ACT. These include Aboriginal sites, artworks, scar trees, ring trees, and areas dedicated to land management by traditional custodians. These assets are identified for protection in BOPs.

Future challenges

A CHANGING CLIMATE

Australia has entered an era of unprecedented climate change. These changes include increased average temperatures, changes in rainfall patterns and increased severity of extreme weather events such as severe storms and heatwaves. This will lead to longer and more severe bushfire seasons.

A changing climate will impact on all aspects of bushfire risk. It is projected there will be an increase in severe storm activity, which is likely to increase the number of lightning ignited bushfires.

Rainfall is a key contributor to soil moisture levels. Less rain also means vegetation will become more dry and combustible.

The ACT is already experiencing record increases in temperature, with 2018 the warmest year on record for mean maximum temperatures and the third-warmest year on record for mean temperatures. In 2018, the ACT had 63 days of 30 degrees or above, almost double the long-term average of 33 days. The mean minimum temperature was also warmer than average.

With this increase in temperatures and below-average rainfalls, climate change is likely to lead to more days of elevated fire danger conditions. This, in turn, will have direct implications for ACT emergency services, including fire services, in their planning and response arrangements.

Climate change is also making it harder for land managers to complete prescribed burning programs. Historically, land managers—including ACT Government directorates—have relied on more favourable weather conditions in late autumn, winter and spring to conduct larger-scale prescribed burns. Prescribed burns can only be conducted when weather conditions are forecast to be safe enough for introducing fire to the landscape (understanding if the weather changes for the worse, prescribed burns can get out of control).

This is a particular challenge for EPSDD, the land manager of the largest areas in the ACT. EPSDD routinely conducts large-scale prescribed burns that may take days or weeks to complete. A changing climate not only reduces the period within which those burns can occur, it increases the likelihood of unpredictable weather occurring that may impact prescribed burns already underway.

This will require careful consideration of the parameters within which prescribed burning can occur. As understanding of the impacts of climate change increases, scientific analysis of these parameters will be required to assess if existing thresholds within which prescribed burning can occur are still appropriate.

Any reduction in the burning window may also require land managers to identify and undertake alternative practices for reducing the underlying bushfire risk. This will have resource implications for land managers, especially managers of parks and reserves where large-scale grazing and slashing is not feasible or appropriate.

Extended bushfire seasons also have implications for the management of fire volunteers, particularly the Rural Fire Service (RFS) and Community Fire Units. Volunteers who need to be on call or on duty for extended hours risk burning out.

Increased demand on fire services, whether volunteer or career, may impact on the ability of fire agencies, in the ACT and interstate, to assist other jurisdictions by supplying personnel and resources for bushfire response operations. Interstate cooperation has been a longstanding feature of bushfire response operations, especially for large-scale bushfires. The ACT regularly provides firefighters, Incident Management Team (IMT) members, vehicles and support personnel for interstate and overseas deployments. It provides a valuable surge capability for all jurisdictions.

Having more people living close to grassland, nature parks or other areas of vegetation can heighten bushfire risk.

A GROWING POPULATION

The ACT population continues to increase and this will be supported by urban infill and greenfield development. This urban development increases the bushfire risk profile that the ACT Government must manage.

Having more people living close to grassland, nature parks or other areas of vegetation can heighten bushfire risk. This is due to several factors, including:

1. Residents are living closer to the vegetated urban edge. As suburbs expand and urban densification occurs, more people are located within the BPA. This is evident in the west and north of Canberra, areas historically at higher risk for bushfires. This affects the potential number of people exposed to a bushfire. It also affects evacuation planning and the location of key firefighting and response assets.
2. A greater population living close to vegetated areas is likely to increase the number of fires, noting that most bushfires lit in the ACT are caused by humans.
3. The unique nature of the ACT as an island within NSW means increased cooperation is required, for planning and fire response. The Ginninderry/ Parkwood development straddling the ACT/NSW border is an example of the challenges facing fire management and response agencies in protecting residents in a given area.

Canberra's Climate 2018*

24%
REDUCTION
IN AVERAGE
(ANNUAL) RAINFALL

ALMOST DOUBLE
THE NUMBER OF HOT
DAYS ABOVE 30°C

1

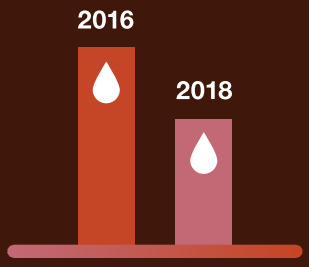
THE OFFICIAL BUSHFIRE
SEASON BEGAN ONE MONTH
EARLIER ON 1 SEPTEMBER

HOT

HOTTEST YEAR ON RECORD
FOR AVERAGE MAXIMUM
TEMPERATURES +1.7°C

DRIEST AUTUMN
SINCE 2004

DRIEST WINTER
SINCE 1994



ACT WATER STORAGES DROPPED TO
65% FROM FULL CAPACITY IN 2016

* Supplied by: Office of the Commissioner for Sustainability and the Environment

HOW THE ACT MANAGES BUSHFIRE RISK

The ACT has long benefited from a multifaceted, comprehensive approach to managing bushfire risk in the Territory. Risk management encompasses measures for prevention, preparedness, response and recovery.

Measures include:

- establishing planning controls so developments are appropriately located and designed
- managing potential fuel loads
- adopting management and operational plans
- ensuring well-resourced and effective emergency services
- increasing community awareness and personal action on the risks posed by bushfires.

Bushfire prevention is not the responsibility of one body but rather the collective responsibility of the entire ACT community. Led by the ESA and EPSDD, bushfire risk management involves all other ACT directorates, utility providers, private landholders and the broader community.

This approach supports the *National Disaster Risk Reduction Framework 2018.* This Australian Government led framework outlines a coordinated approach to reducing natural disaster risk. In doing so, it draws on the United Nation's *Sendai Framework for Disaster Risk Reduction 2015–2030*, which focuses on increasing resilience by reducing new and existing disaster risks.

The *National Disaster Risk Reduction Framework 2018* contains several priorities, including:

- understanding disaster risk—increase public awareness through trusted and authoritative mechanisms, and the broad disclosure of risk information that is integrated into risk planning across sectors
- making accountable decisions—ensure decision makers recognise the impact of their decisions on disaster risk, with a focus on infrastructure, land-use and development planning
- targeting investment—ensure investments target high priority and significant disaster risk and recognise that risk reduction reduces future recovery costs
- understanding governance, ownership and responsibility—ensure all sectors and communities understand the extent to which they are responsible for reducing disaster risk and acting to reduce that risk.

The risk mitigation efforts implemented in previous SBMPs support a number of these priorities. This SBMP builds on them.

Bushfire prevention is not the responsibility of one body but rather the collective responsibility of the entire ACT community.

Risk governance

Complementing the Emergencies Act, the ACT Government has a governance structure with oversight of emergency planning and response coordination. The Security and Emergency Management Committee of Cabinet provides general strategic direction on ACT Government prevention and preparedness arrangements. The Security and Emergency Management Senior Officials Group is the primary mechanism for ensuring cooperation and coordination between ACT Government agencies in planning for and responding to emergencies. It is supported by the Security and Emergency Management Policy Group which comprises officials from all relevant ACT Government directorates. It develops, implements and reviews specific security and emergency management matters including plans and sub-plans.

These two groups work closely with the ESA Commissioner on a coordinated and cooperative approach in planning for and responding to emergencies in the ACT, including bushfires.

Understanding the risk

Bushfire risk is the likelihood of a fire starting, spreading and affecting people, property and the environment. Due to the unpredictable occurrence of bushfires, it is challenging to quantify the risks bushfires represent. Further, while the treatment of identified hazards will mitigate bushfire risk to an extent, it is simply not possible to completely eliminate all the risks.

Identification of areas of higher risk underpins the ACT bushfire mitigation strategies. The ESA and EPSDD undertake a comprehensive spatial analysis of Territory areas that face a higher level of bushfire threat. Results are presented in several maps and inform a range of planning and development controls. The methodology used by EPSDD to inform the RFMP applies a residual risk model[2] to quantify the effectiveness of fuel treatments across the landscape.

The ESA, through the SBMP, adopts an integrated risk-based approach to bushfire management in the Territory, informed by shared responsibility, continual learning and evidence based decision-making. In consultation with key stakeholders, the ESA will explore the adaptation of residual risk for bushfire mitigation taking into account all treatment options used to manage bushfire risk.

2 https://www.ffm.vic.gov.au/fuel-management-report-2016-17/what-we-achieved-statewide/residual-risk

THE BUSHFIRE PRONE AREA

The BPA is the area of the ACT that is at high risk of being impacted by bushfires. It primarily reflects the potential fuel load of the land.

It includes all rural areas in the Territory and areas of significant vegetation in urban areas, such as the Canberra Nature Park.

The BPA also includes a buffer zone, extending up to 100 metres from the vegetated edge into inhabited areas. This is because bushfires can extend into urban areas, spreading by way of ember attack or by house-to-house ignition, although the risk they face is lower. A bushfire zone of 100 metres reflects best practice as set out in the relevant Australian Standard *(AS3959—Construction of buildings in Bushfire Prone Areas)*.

Declaring the BPA has two main functions:

First, it allows the community to assess personal level of risk. The ESA targets community education and awareness campaigns to all residents of the BPA.

Second, new residential developments or substantial redevelopments within the BPA, from late 2019, will need to be assessed for bushfire risk. One way this can be done is by determining bushfire attack level (BAL) rating. The BAL is a measure of a building's exposure to direct flame contact, ember attack and radiant heat. This site-specific assessment considers factors such as the slope of adjacent land, surrounding vegetation and distance of the building to that vegetation.

The bushfire risk will determine if additional bushfire related construction requirements under the *Building Code of Australia* apply to a development. These requirements seek to enhance the ability of a building to withstand the impacts of bushfires. They do so by improving a building's ability to withstand contact with direct flame or radiant heat (such as by using heat resistant materials), or by reducing the likelihood that windborne embers ignite the building (such as by screening vents).

Compliance with the Building Code does not guarantee that the building will not be substantially damaged or destroyed by bushfire, or behave as a bushfire shelter. However, it enhances public safety by providing a degree of protection for occupants sheltering as the fire front passes.

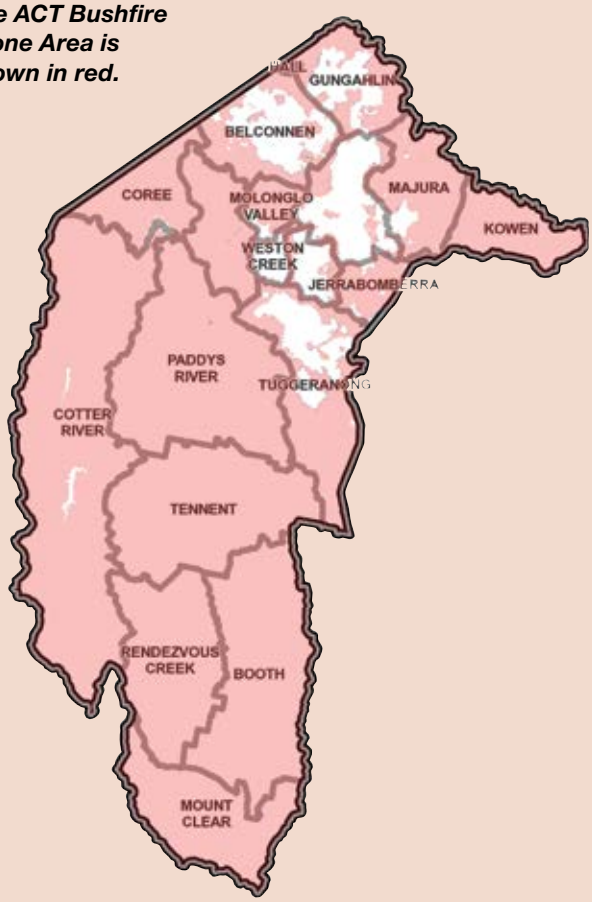
Previously these requirements were only applied in greenfield developments and in non-urban areas. From late 2019, they will apply to all construction in the BPA, whether it is a greenfield or established suburb. The requirements will also apply to the construction of new houses (including knockdown rebuilds) and substantial alterations.

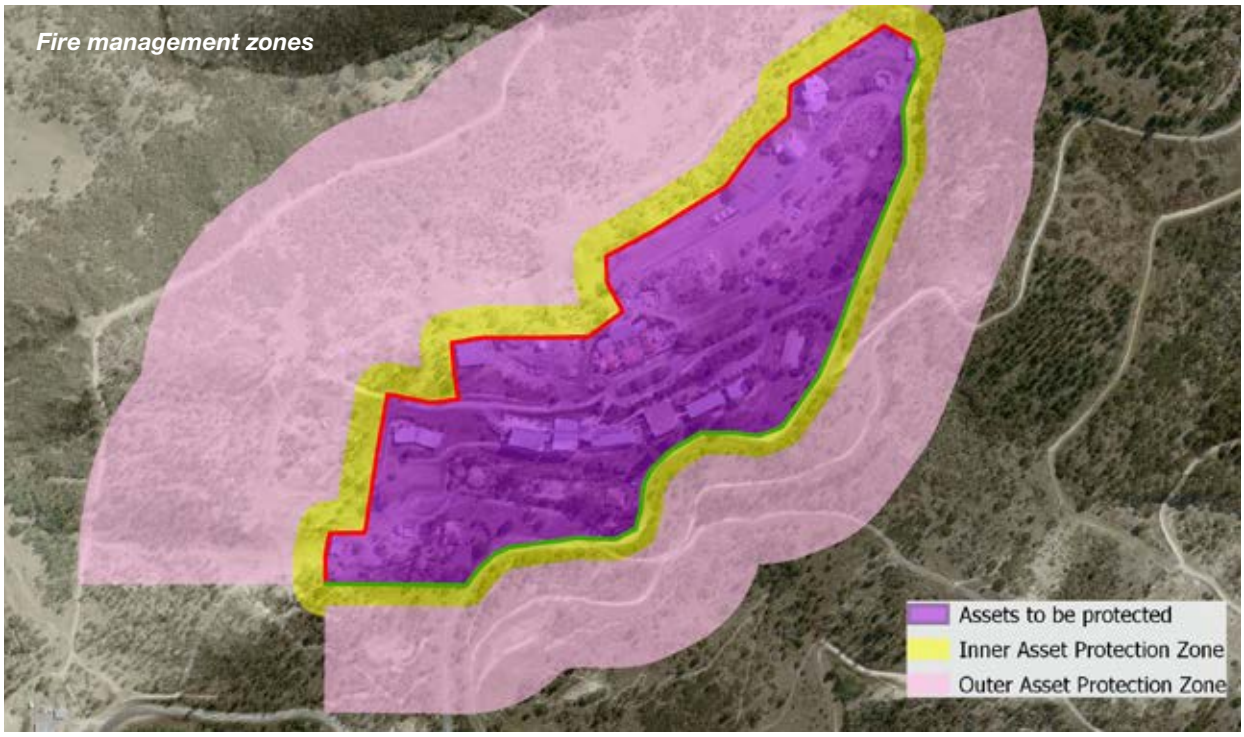
Development of sites on which sensitive-use developments are planned (such as schools or aged care facilities) in the BPA are also controlled. No sensitive-use developments are permitted in the BPA, unless the ESA Commissioner is satisfied that appropriate measures are in place to appropriately minimise the risk to residents and users of those facilities. The development must also be consistent with revised bushfire risk mitigation requirements to be developed as part of the review of the Territory Plan.

The BPA is regularly reviewed and refined to reflect changes in land-use and tenure, as improved vegetation mapping becomes available and to address local and site-specific issues as required.

FIRE MANAGEMENT ZONES

The ACT Bushfire Prone Area is shown in red.





Fire management zones

Fire management zones are areas within the BPA identified as warranting priority fuel management actions and appropriate access for fire agencies.

The location and alignment of these zones reflect the risk of bushfires starting and spreading, and impacting on life, property and other assets.

Fire management zones are classified into sub-zones. The *ACT Bushfire Management Standards* prescribe the treatment standards for and widths of each zone. Widths vary depending on factors such as vegetation type and aspect of, and length of, the applicable fire run. Fire management zones on Canberra's northern and western edges may be wider as bushfires from that direction are usually more severe.

Zones are approved by the ESA Commissioner and reviewed as required to reflect significant changes.

Inner Asset Protection Zone

Areas immediately adjacent to an asset, such as a residential boundary, requiring intensive fuel management to minimise fuel loads.

Outer Asset Protection Zones

Areas typically adjoining Inner Asset Protection Zones, and often to the north and west of the asset, particularly in areas with higher risk vegetation. Fuel management is a priority in these areas.

Strategic Firefighting Advantage Zones

These are strategically located corridors of land, located and managed to break up major fire runs that would otherwise impact on residential areas. Fuel management should be compatible with ecological requirements.

Agricultural Fire Protection Zones

Areas used for rural production or agistment. Less intensive fuel management is required but should be in accordance with the agricultural uses of the land.

Landscape Fire Management Zones

These are ACT Government-managed lands. Hazard reduction burns may be used to meet ecological or water catchment requirements.

Aboriginal Fire Management Zones

Areas and sites of cultural significance. Within this zone, cultural burning and other land management treatments may occur to support traditional cultural practices. Any cultural burning is expected to be compatible with ecological requirements.

BUSHFIRE ABATEMENT ZONE

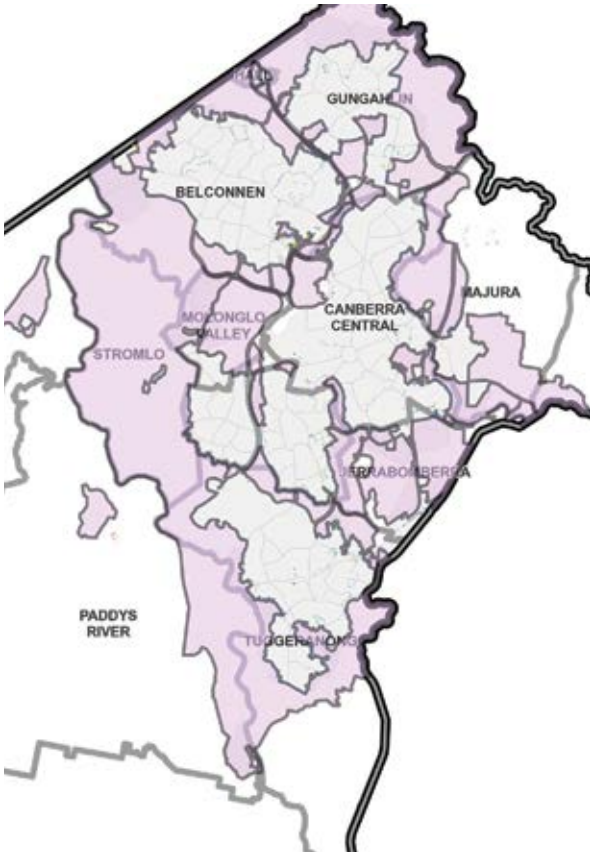
The Bushfire Abatement Zone (BAZ) surrounds the urban area of Canberra.

Part of the BPA, it depicts the urban and/or rural interface that is subject to more intensive planning and management to minimise the risk of bushfires entering the urban area.

Rural landholders within the BAZ must complete a BOP detailing specific fire mitigation activities to be undertaken on that land. BOPs are described in more detail in the next section.

The BAZ is reviewed as required to reflect changes in land-use and tenure, and approved by the ESA Commissioner.

The Bushfire Abatement Zone (area in purple).



Planning and development controls to lower the risk

Land-use planning is a key prevention tactic for managing fire risk, particularly on the vulnerable urban edge. The ACT Government does this through a hierarchy of strategic, operational and tactical plans and maps. These place bushfire risk at the centre of the government's planning and development processes and prescribe the obligations and measures that apply. They provide an ACT-wide, tenure-neutral approach that reflects the principal purpose for land-use, taking ecological, cultural and heritage considerations into account.

Land-use planning is a key prevention tactic for managing fire risk, particularly on the vulnerable urban edge.

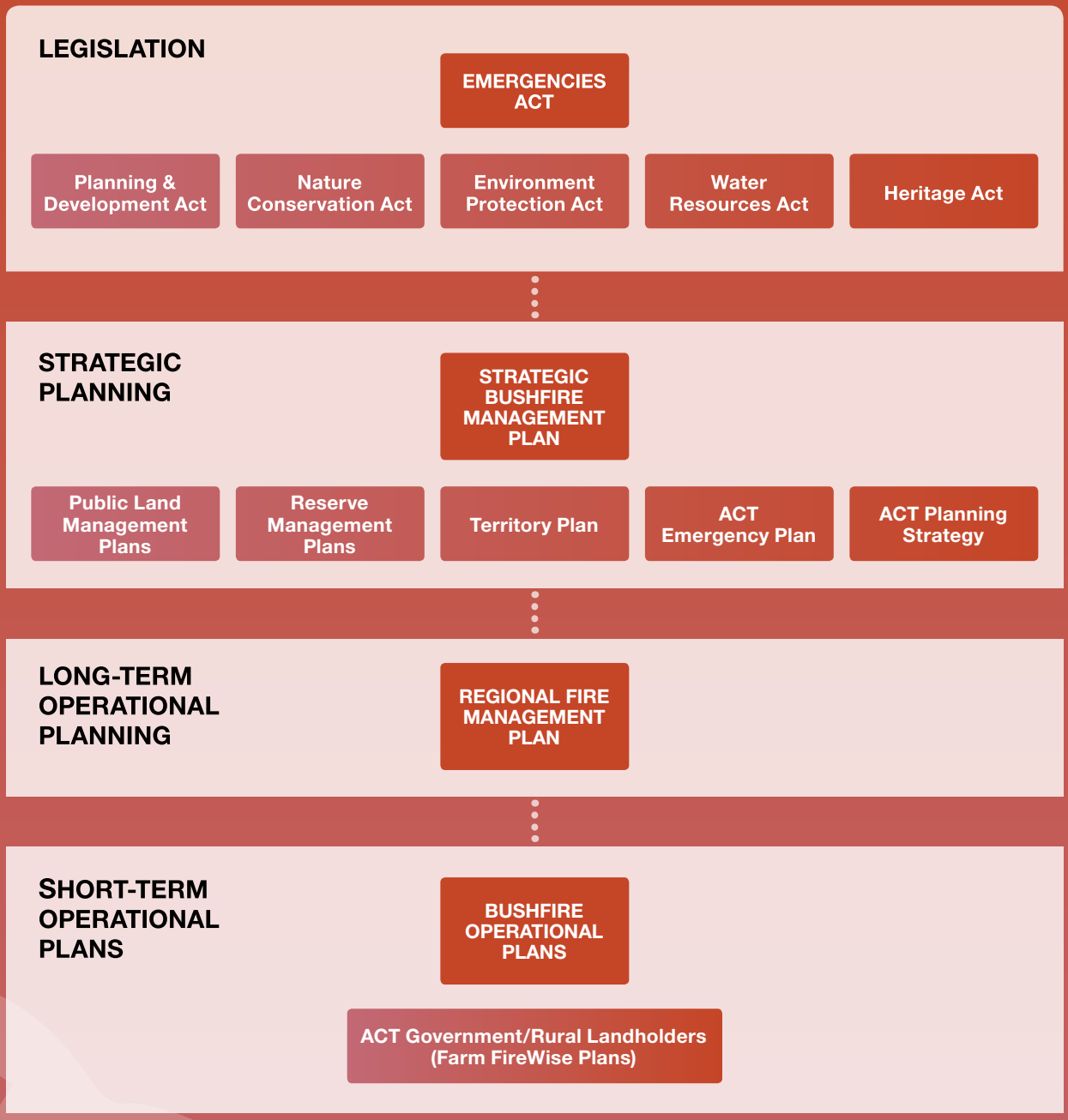
LAND MANAGEMENT PLANS

The *Planning and Development Act 2007* requires that public land be managed in accordance with a public land management plan. A plan prepared for a wilderness area, national park, nature reserve or catchment area is referred to as a 'reserve management plan'. The Emergencies Act states that a public land or reserve management plan has no effect to the extent of any inconsistency with this plan. In practice, bushfire mitigation strategies in this plan are consistent with plans of management for nature conservation areas.

Land or reserve management plans have been prepared for all rural public lands, including Namadgi National Park, Canberra Nature Park, Lower Cotter Catchment Reserve, Molonglo and Murrumbidgee River corridors, as well as select areas in the urban area.

Land management plans identify what is important about an area (its values), what is hoped to be achieved in managing the area (objectives) and how objectives will be achieved (policies and actions). The plans provide guidance to land managers and other stakeholders (including visitors, neighbours and volunteers). They are developed in close consultation with those stakeholders and the public.

The hierarchy of plans



REGIONAL FIRE MANAGEMENT PLAN

The Regional Fire Management Plan (RFMP) is the link between this plan and more detailed BOPs. It is developed in close consultation with community members, key stakeholders and community groups.

The RFMP covers the majority of land managed by EPSDD and Transport Canberra and City Services Directorate (TCCS). It details the major fire fuel management, fire access management and fire infrastructure management strategies that Territory land managers will implement over a 5–10-year period. It also details indicative timings for that work.

While the RFMP is prepared every five years with a 10-year outlook, it may also be reviewed at other times to reflect significant changes, such as a large bushfire in an area or the development of a new greenfields estate.

In 2019, EPSDD adopted a new approach to measuring the effectiveness of bushfire fuel treatment undertaken on public land. This approach quantifies the effectiveness of fuel treatments across the landscape to seek to reduce impacts from bushfires.

EPSDD fuel management activities are undertaken at areas of higher risk to reduce and manage fuel loads, and this helps reduce the size, speed and severity of major bushfires. The term 'residual risk' describes the amount of bushfire risk which remains after bushfires and fuel management activities have reduced fuel. This approach is an improvement on the previous 'annual hectares treated' reporting regime, and has been implemented in other jurisdictions.

If residual risk is 100 per cent there has been no fire in the landscape and no fuel reduced leaving the landscape at maximum risk where fires will spread and impact on life and property. If residual risk is at 50 per cent the potential impacts to life and property will be reduced by about half.

This concept of residual risk—developed for land management purposes—is focused on bushfire fuel hazard and cannot be readily applied to other aspects of bushfire prevention, preparedness, response or recovery. However, the actions and activities under this SBMP are designed to complement the land management activities undertaken under the RFMP. This inter-relationship reflects that land management activities can only reduce, not remove, the bushfire risk facing the community.

Using a 'residual risk' target allows bushfire fuel management activities (such as prescribed burning) to focus on areas that fire modelling shows will have the greatest effect in reducing risk to life, property and the environment.

The RFMP fuel management program is focused on maintaining a residual risk of between 30 and 50 per cent of the maximum residual risk for EPSDD-managed land.

It is impossible to completely remove all bushfire risk. The RFMP seeks to reduce the severity of fires and make response operations easier, safer and more effective. It does not seek to transfer risk from the land manager to fire agencies, as ACT land managers have an important role in other aspects of bushfire prevention, preparedness, response or recovery. ACT Government Directorates and fire agencies are committed to attempting to ensure that bushfires cause no damage to life, property or the environment. However, it is acknowledged that ACT firefighting services' ability to respond may be constrained on days of elevated fire danger conditions due to multiple competing demands.

The RFMP is available on the ACTmapi website—www.actmapi.act.gov.au

The ACT Government actively works with fire and emergency services agencies in NSW to develop bushfire management strategies that align with the level of bushfire risk within each jurisdiction.

BUSHFIRE OPERATIONAL PLANS

BOPs detail the specific type, location and timing of fuel reduction, access and infrastructure activities proposed to be undertaken by the landholder.

Who is required to prepare a BOP?

The Emergencies Act mandates that BOPs are required for all unleased territory land or land occupied by the Territory. It also states that BOPs may be required for other land in the BAZ if this plan mandates that a BOP be prepared.

Under this plan, all landholders within the BAZ must prepare a BOP for that land.

Utility providers managing land or assets located within the bushfire abatement zone must also prepare a BOP.

BOPs are prepared by landholders. The ESA supports and assists rural landholders, through the RFS Farm FireWise program, in their prevention, preparedness, response and recovery actions and capabilities. Under the program, a risk assessment is completed of the rural property, identifying at-risk assets. Mitigation strategies are then developed to reduce the risk to those assets. Plans developed for rural leases under the RFS Farm FireWise program meet the requirements for a BOP.

The ESA Commissioner is responsible for approval of all BOPs.

BUSHFIRE MANAGEMENT STANDARDS

The *ACT Bushfire Management Standards* complement this plan. They are made by the ESA Commissioner and mandate the technical specifications for requirements imposed by this plan. This includes the standards specifying widths for inner and outer asset protection zones, the fuel management requirements for fire management zones and the technical specifications for fire access roads.

Response and coordination plans

The ESA, including fire services, other emergency services and support agencies, has in place doctrine, operational procedures and internal policy documents to guide preparedness and response arrangements in the ACT. These include the *Emergency Plan* and its sub plans, Commissioner's guidelines, standard operating procedures and MOUs between government and non-government agencies.

CROSS-BORDER ARRANGEMENTS

The ACT Government actively works with fire and emergency services agencies in NSW to develop bushfire management strategies that align with the level of bushfire risk within each jurisdiction.

Formal arrangements are in place between ACT and NSW agencies to provide integrated and efficient cross-border response arrangements, incident management liaison, common communications, training, shared resources and mutual support.

Response capability

The ACT Government maintains a wide range of response capabilities within the Territory's fire services to allow a rapid and effective response to bushfires, both in the ACT and the surrounding regions.

ACT RURAL FIRE SERVICE

The RFS has primary legislative responsibility for bushfire response in the Territory's rural areas.

The RFS has approximately 450 volunteer members, administratively allocated to one of eight brigades located throughout Canberra.

Employed officers support and manage RFS operations and training. These officers are assisted by a range of ESA personnel providing support and enabling functions, including logistics, incident management, spatial services and vehicle maintenance.

The RFS maintains a range of response capabilities throughout the year that are scaled up during the bushfire season. These include:

- Four fire towers strategically placed around the ACT to help detect bushfires early.
- A fleet of light, medium and heavy tankers, command and support vehicles, including six Compressed Air Firefighting Foam Systems appliances.
- Remote Area Firefighting Teams (RAFT) to undertake firefighting in locations where vehicles cannot access, gaining access to bushfires on foot or inserted by helicopter. This specialised capability is highly regarded by other fire agencies, with regular requests made for RAFT members to assist in interstate response operations.
- An aerial firefighting capability, undertaking water bombing, RAFT insertion or aerial surveillance. In 2018, the RFS engaged a new light helicopter with Specialist Intelligence Gathering (SIG) capabilities—a significant addition to bushfire response aerial capabilities.

PARKS AND CONSERVATION SERVICE

The ACT Parks & Conservation Service (PCS) is constituted under the *Nature Conservation Act 2014* as a Territory land manager under the EPSDD. It employs approximately 220 full time staff. PCS manages more than 70 per cent of the ACT, including Namadgi National Park, Nature Reserves, the Lower Cotter Catchment and Googong Foreshore, forestry plantations and selected TCCS urban sites.

As part of its land management functions, PCS is responsible for managing fuel, undertaking fire mitigation and maintaining roads, fire trails and access on unleased Territory lands that it manages on behalf of EPSDD as well as relevant areas of TCCS. PCS is responsible for preparing annual BOPs for these areas and undertaking fire preparedness and mitigation works under those BOPs.

PCS is also a brigade operating under the RFS for bushfire response and fire suppression operations. This brigade comprises approximately 180 career and seasonal fire personnel.

PCS maintains capabilities for use in bushfire response operations:

- a fleet of light, medium and heavy tankers, command and support vehicles
- RAFT-qualified members
- contracted plant, such as dozers and graders
- support and enabling capabilities, including qualified IMT personnel, advanced chainsaw operators, bushfire behaviour analysts and burnt area recovery specialists.

The ESA financially supports PCS bushfire response capabilities by supplying and maintaining the majority of PCS response vehicles.

ACT FIRE & RESCUE

The ACT Fire & Rescue (F&R) has primary legislative responsibility for bushfire response in the urban areas of the Territory. Its members routinely attend bushfires in the rural area because the ESA responds to bushfires with the nearest, most appropriate resource.

F&R has a full-time, 24-hour career workforce and fire appliances including Compressed Air Firefighting Foam Systems and rural tankers.

Like the RFS, F&R is backed by support and enabling services provided by the ESA.

450

APPROXIMATE NUMBER OF RFS VOLUNTEER MEMBERS ALLOCATED TO ONE OF 8 BRIGADES IN CANBERRA

F&R Community Fire Units

A part of F&R, Community Fire Units are teams of local residents living close to bushland areas across the ACT. They are trained and equipped by F&R to safeguard their neighbourhood during a bushfire until fire services arrive.

A typical team comprises eight to 30 members and has a designated area encompassing 50 to 80 homes. Approximately 850 volunteer members operate across 50 teams.

In addition to their bushfire response duties, Community Fire Unit members are active in community engagement to educate their local communities about bushfire dangers in their areas.

OTHER SUPPORT

The ACT fire agencies' response operations are supported across the ACT Government. The State Emergency Service and other support and enabling services within the ESA directly assist fire response operations by providing logistic and planning assistance to the fire services.

More broadly the ESA coordinates whole-of-government support arrangements provided by other ACT Government Directorates. This includes establishing and operating emergency evacuation centres, providing buses to support evacuation and treating the medical needs of those affected by bushfire.

Community and volunteer organisations also play an important role in response operations, particularly in managing the consequences of a bushfires and supporting the recovery processes.

Community engagement and education

Recognising the vital role of the ACT community in preparing for, responding to and recovering from bushfires, the ACT Government focuses on increasing community awareness of bushfire risks.

Encouraging and supporting households to complete a bushfire survival plan is a key focus of the ESA's bushfire awareness efforts. Bushfire survival plans are discussed in more detail under *Objective 3: A community that is prepared for bushfires.*

The ESA has branded all community engagement activities and messaging under the standard brand of 'Canberra Be Ready'.

The ESA is active in educating and informing the community. Key engagement events include:

- The ESA community preparedness doorknock campaign sees emergency service volunteers engaging directly with many thousands of residents in areas of higher bushfire risk to educate them about their risk, and to support mitigation efforts.
- The ESA Open Day at ESA Headquarters in Fairbairn. It is the opportunity for ACT Government directorates and supporting agencies and entities to share their capabilities, and educate and engage with those living in the ACT and surrounding community. Thousands attended the event in 2017 (5,000) and in 2018 (7,500).

B

PART B:

OBJECTIVES AND ACTIONS

SBMP OBJECTIVES

This section contains the objectives of the SBMP, along with the strategies and actions necessary to achieve them.

This plan builds constructively on SBMP Version 3, especially on the proven strategies of strong engagement with the community and use of broad area hazard reduction through BOP preparation and implementation.

The SBMP has six themes, each with a set of objectives and outcomes.

Table 1 details the SBMP's themes, objectives and outcomes. A detailed discussion of background, strategies and actions is provided for each objective in this section.

Table 1: Strategic Bushfire Management Plan themes, objectives and outcomes

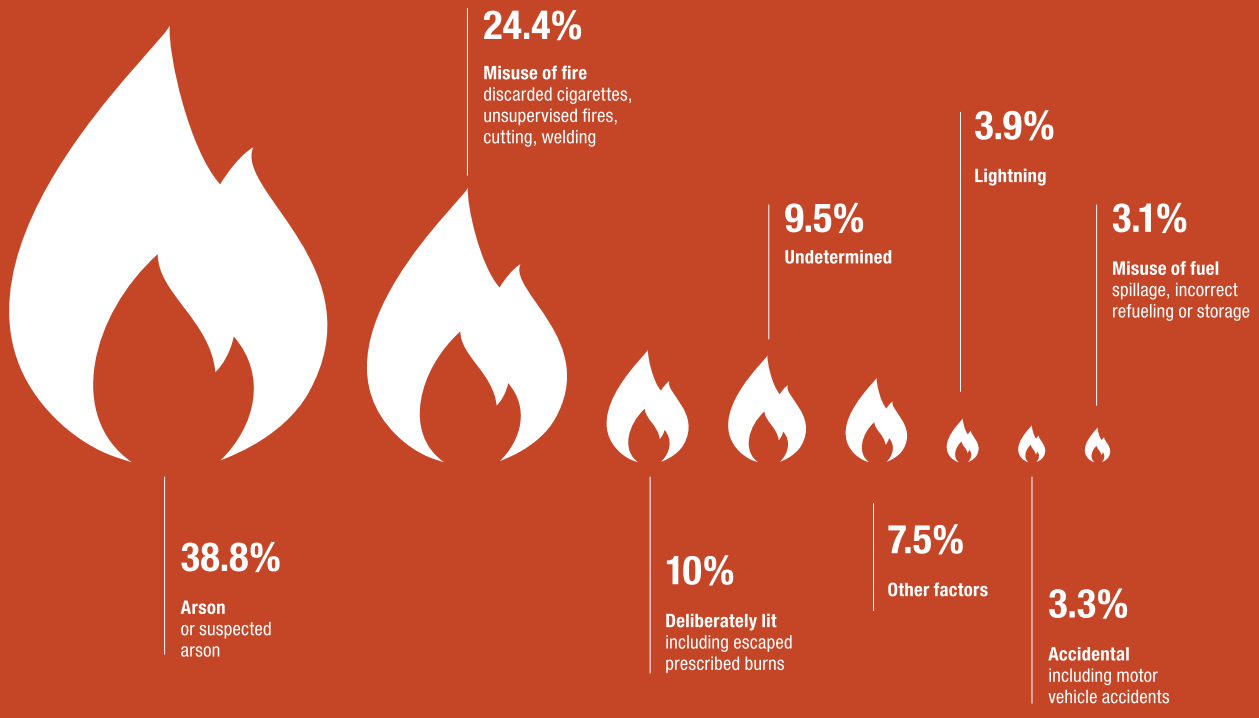
OBJECTIVES		
COMMUNITY		
1	**A reduction in bushfire ignitions.**	Programs will be implemented to reduce the number of ignitions, targeting systemic and human-caused factors of deliberately lit bushfires (arson) and the careless use of fire.
2	**Planned fire management on all private rural lands.**	With the support of the ACT Government, private rural land managers will develop a whole-of-property plan to reduce the risk of bushfire to their business and surrounding areas. This plan will be revised every five years or as required.
3	**A community that is prepared for bushfires.**	Having a community that is prepared for bushfires is a shared responsibility.
FIREFIGHTING OPERATIONS		
4	**Effective firefighting operations by skilled and supported personnel.**	The ACT Government will support a responsive bushfire fighting capability with sufficient numbers of skilled and motivated personnel to respond to bushfires.
5	**The necessary equipment and resources to respond to and extinguish bushfires.**	The ACT Government will ensure an adequate supply of equipment and resources, supported by clear principles and systems of work, to support operations, so firefighters can respond to bushfires safely and effectively.
6	**Extinguish bushfires when they occur.**	A rapid, decisive and coordinated response will provide the best opportunity to control bushfires in the shortest possible time and in a safe manner.
BROAD AREA FUEL REDUCTION AND FIRE ACCESS		
7	**Broad area bushfire fuel reduction across the natural and rural landscape of the ACT.**	Broad area fuel reduction practices will be used to establish and maintain a range of differing fuel loads across the broader natural and rural landscape of the ACT, to assist in suppressing bushfires and reducing the impact of bushfires on life, property and the environment.
8	**Access for vehicles and firefighters to undertake bushfire fighting and fuel reduction.**	Government and private land managers will work together to provide a network of fire trails and helipads that provide safe and effective access for firefighting and fuel reduction operations.
ADAPTIVE MANAGEMENT AND CLIMATE CHANGE		
9	**Adaptive management of current and future bushfire risks.**	The ACT Government will adopt an adaptive management process to address increasing bushfire risks, including climate change, and support continuous improvement based on sound research, modelling, monitoring, evaluation and lessons learned.
LAND-USE PLANNING		
10	**Land-use policy and planning that reduces bushfire risk.**	The assessment and mitigation of bushfire risk through effective land-use policy and planning will reduce the exposure of built and natural environments to bushfire.
11	**Integrated bushfire protection at the urban edge.**	A range of complementary measures will be used to achieve integrated bushfire risk reduction on the urban edge.
BUSHFIRE RECOVERY		
12	**Supported communities for bushfire recovery.**	Recovery from bushfire may start while bushfire response operations are underway and may need to continue for a long time afterwards. Recovery will encompass actions to address the social, economic and environmental impacts of bushfires, as they affect individuals, the broader community and environment.

Causes of bush and grass fires in the ACT

FROM MAY 2014 TO FEBRUARY 2019

Human-caused ignitions include deliberate acts—arson, suspected arson, car fires, prescribed burns, burning off without a permit, illegal burning off and accidental or careless acts. They also include ignitions from power lines, motor vehicles, campfires, motor vehicle accidents and sparks from machinery.

Many activities are prohibited on days of elevated fire danger conditions and those declared as a Total Fire Ban day.



COMMUNITY

1. A reduction in bushfire ignitions

Programs will be implemented to reduce the number of ignitions, targeting systemic and human-caused factors of deliberately lit bushfires (arson) and the careless use of fire.

Bushfires start from both natural and human causes. Most bushfires in the ACT are caused by humans—deliberately or accidentally—and are preventable.

Climate, weather and factors, such as the degree of grassland curing and residual fuel dryness, dictate the underlying conditions that make a bushfire more likely to be significant and harder to control.

While lightning is responsible for only a small proportion of bushfires, it is the most common natural cause of ignition. Historically, the largest areas burned in the ACT are attributed to lightning ignitions. Often, lightning caused bushfires occur in the ranges to the west of Canberra and multiple strikes can occur in a dry storm. Studies conducted on lightning in the ACT have continued to support appropriate response strategies for fuel management, bushfire detection and response that focus on lightning prone areas. The ACT uses real time lightning strike data detection to help rapidly identify ignitions caused by lightning.

It is no coincidence that many bush and grass fires occur in or near built-up areas of Canberra. These are usually human induced. With Canberra's growing population and geographic expansion, the number and frequency of these ignitions will likely increase.

Following the recommendations from the 2009 Victorian Bushfires Royal Commission, the ACT Government and Evoenergy reviewed the risk of ignitions associated with electricity infrastructure and supply. In 2018, *the Utilities (Technical Regulation) (Electricity Powerline Vegetation Management Code)* (the Utilities Code) was approved as a Disallowable Instrument to provide mandates for managing vegetation around power lines on both public and private land.

PIERCES CREEK CAR FIRE

Car fires in bushland present a risk. Some cars involved, such as the one that started the Pierces Creek bushfire in November 2018, were stolen and set on fire. Other bushfires have been caused by arson of abandoned cars.

The plan introduces an action to enable the rapid identification and removal of abandoned vehicles that could pose a fire hazard in areas of high bushfire risk.

This burnt vehicle was the ignition source for the Pierces Creek bushfire which burned for 4 days, covering 204 hectares of pine forest.

STRATEGIES

As part of community engagement activities, targeted awareness and education programs will be delivered to help the community understand its responsibility for reducing preventable ignitions and promptly reporting fires. These are discussed in more detail under *Objective 3: A community that is prepared for bushfires.*

ACT Policing will continue to investigate arson-related bushfires or where the ACT Coroner considers there have been significant impacts from a bushfire. They will be supported by the RFS and F&R who have specialists trained to investigate bushfire causes. These investigations help identify preventative programs delivered by ACT Policing and the ESA.

The ESA and ACT Policing will continue to participate in the national work plan to 'Reduce Bushfire Arson in Australia'[3] which provides for greater cooperation between fire services, police agencies, social services and the criminal justice system to take a preventative approach to address bushfire arson. One such approach is the Juvenile Fire Awareness and Intervention Program being delivered by F&R across the ACT to children between the ages of 4 and 18 who have exhibited fire lighting behaviours.

Rural landholders will continue their important role in reducing bushfire ignition by actively managing their properties with actions preventing the spread of fire as part of their Land Management Agreements and Farm Firewise plans. *See Objective 2: Planned fire management on all private rural lands.*

The 2018 Utilities Code sets clear requirements and responsibilities for managing vegetation near aerial powerlines and a regulatory action is included in this SBMP.

For bushfires in the ACT's remote areas, rapid detection and response is critical. The Territory has a network of fire towers and lightning detection systems which continue to play an important role in the rapid detection of ignitions. Aerial observation may also be conducted after significant lightning strikes. Applied data on susceptible parts of the landscape will allow more effective use of aerial resources for detecting bushfires. The ACT will continue to use a helicopter fitted with SIG capability to provide real-time visualisation and transmission of information to IMTs to aid early detection of bushfires.

3 Australian Government Attorney-General's Department 2009.

Investigating the bushfire at Pierces Creek, 2018.

The ACT has a network of fire towers and lightning detection systems and these will continue to play an important role in the rapid detection of ignitions.

The ESA Commissioner has important statutory powers to prevent bushfires by:

- regulating the use of fire by introducing seasonal restrictions (that is, during the bushfire season)
- regulating the use of machinery, considering the level of fire danger
- declaring days of total fire ban in the ACT to limit ignitions, or when local or regional conditions may require increased vigilance.

ACTIONS	
1.1	In conjunction with ACT Policing, ESA will continue to deliver fire education and arson intervention programs for juveniles.
1.2	Conduct arson investigations in accordance with the *MOU for the Investigation of Fires between ACT ESA and ACT Policing.*
1.3	The Technical Regulator will audit and assess the electricity distributor's compliance with its *Vegetation Management (Bushfire & Environmental) Works Plan.*
1.4	Develop whole-of-government procedures for the rapid identification and removal of abandoned vehicles posing a fire hazard in areas of high bushfire risk.
1.5	Employ predictive modelling techniques, technology such as SIG, and maintain and staff fire towers to ensure rapid detection of ignitions in the ACT landscape.

2. Planned fire management on all private rural lands

With the support of the ACT Government, private rural land managers will develop a whole-of-property plan to reduce the risk of bushfire to their business and surrounding areas. This plan will be revised every five years or as required.

This SBMP recognises that primary production practices reduce fuel loads, improve access and manage the land. This makes leasehold management a vital, integral component of reducing bushfire risk in the ACT.

Approximately 180 rural leases are involved in a range of enterprises in the ACT. Agricultural production in the Territory includes broad acre grazing, cropping and intensive horticulture, such as olive groves, truffle farms and vineyards. Other rural enterprises include tourism, agistment for horses and small businesses.

Particularly to the north and west of Canberra, rural leases separate the city and urban nature reserves from the rugged and heavily forested areas of the Brindabella Ranges.

Under the RFMP, fuel reduction and access is planned on government lands and undertaken according to BOPs. NSW National Parks & Wildlife Service and NSW RFS also carry out fuel reduction burns on the NSW side of the border and continue to plan these in collaboration with the ACT. However, because of the relative difficulty in extinguishing fires in remote areas, the risk remains that bushfires could spread from government to adjacent rural lands.

Bushfire impacts have the potential to affect rural enterprises significantly. This extends well beyond business, with many rural enterprises also being a place of living and connection with the land.

Recovery following bushfires on rural land is an important part of these plans. The time taken for recovery may be protracted where the loss of infrastructure (fencing and structures) and fodder may render businesses unviable for many months, or even longer if bushfires occur in years of drought. In the longer term, stocking and breeding programs, pasture improvement, intensive horticulture and plantation forestry may also take many years to recover.

The BAZ was established to provide a zone of more intensive planning and management to reduce the risk of ignition and bushfire encroaching on the urban edge. All landholders in the BAZ, which includes government-owned and rural land, must prepare a BOP. At July 2019, 76 rural leases were within the BAZ.

Preparing a Farm FireWise Plan

All rural landholders in the BAZ must prepare a Farm FireWise Plan. All other rural landholders are encouraged to prepare a plan.

These help rural landholders plan and prioritise a comprehensive fire management plan for their property.

It informs fire services of access points and priorities for protection.

FARM FIREWISE PLANS CONTAIN VALUABLE INFORMATION SUCH AS:

- landholder name, address and contact details
- access and egress, which is information about property access and any hazards that fire trucks might find, such as hidden rocks
- prevention plans and mitigation, including protection of assets on the property and strategic areas, such as boundaries
- preparation and response plans in the case of different fire danger ratings
- assets, including property and livestock, and the priority for their protection
- firefighting resources, including fire protection systems and water supplies.

All rural landholders in the BAZ must prepare a Farm FireWise Plan.

STRATEGIES

Rural landholders in the ACT, like urban residents, have a duty to take reasonable care to prevent the spread of a fire from their property. Most rural landholders have a high level of awareness of the risks of ignition associated with machinery, equipment and infrastructure, particularly during elevated fire danger conditions. Long-practiced fuel management techniques, such as targeted grazing, are also important in preventing the spread of bushfires.

The requirement for a BOP for rural landholders is met through the Farm FireWise program. ESA will continue to support rural landholders to prepare their Farm FireWise plans, which must be reviewed every five years and approved by the ESA Commissioner. The RFS will audit and assess these BOPs for compliance with standards.

The requirement to identify reasonable measures for managing bushfire risk and any fire management requirement is also established under Land Management Agreements. Farm FireWise plans must comply with the conditions of these agreements.

The ESA will develop a targeted program to increase participation by rural landholders in volunteer activities, including the RFS. This will help build a connected, capable and resilient rural community.

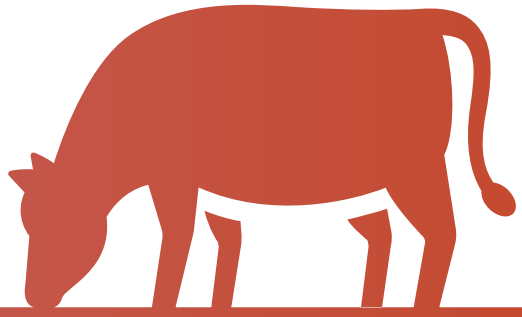
Each bushfire season is different. The ACT Government will work with the Rural Landholders Association to provide preseason briefings on the assessment and outlook for each bushfire season.

As the Canberra landscape has evolved, so too has the need for planning bushfire risk management for the Molonglo River and Murrumbidgee River corridors. These corridors include both government-managed and rural lands. The ACT Government will work closely with rural landholders to prepare a coordinated approach for maintaining and developing BOPs appropriate for these areas.

For principles relating to fire management zoning at the rural-urban edge, see *Objective 11: Integrated bushfire protection at the urban edge.*

The map prepared for a Farm FireWise Plan illustrates critical information about access and assets to be protected in a bushfire event.

ACTIONS	
2.1	Rural landholders in the BAZ must prepare, submit and implement a BOP, consistent with the *ACT Bushfire Management Standards,* and review it every five years.
2.2	The ACT Government will continue to support rural landholders to develop and maintain fire management plans through the Farm FireWise program. Priority will be given to rural landholders within the BAZ.
2.3	Review Farm FireWise materials annually to incorporate changes to relevant legislation and policy.
2.4	The ACT Government will work closely with rural landholders to encourage preseason preparation activities through advice on seasonal climate risk, with emphasis on rural landholders within the BAZ.
2.5	Increase participation by rural landholders in ESA's volunteer services.
2.6	Develop a program to coordinate and prioritise bushfire operations across rural lands and river corridors.



Long-practiced fuel management techniques, such as targeted grazing, are also important in preventing the spread of bushfires.

3. A community that is prepared for bushfires

Having a community that is prepared for bushfires is a shared responsibility.

Living in the bush capital means that everyone needs to be prepared for bushfires when they occur. This means all community members—businesses, land managers, landholders, groups, neighbours and individuals—not just the ACT Government.

Lessons learned from bushfires in Australia and overseas reveal that those most likely to be harmed during extreme bushfire events are living in a BPA, are vulnerable due to their personal circumstances and who leave making critical decisions until the last moment.

The ACT Government provides information and education to the community through bushfire preparedness campaigns and will continue to do so. These campaigns aim to increase public knowledge of bushfire risk, the actions individuals and groups need to take to reduce that risk, and what to do if a bushfire threatens.

It is important to recognise that some people will need help to understand or undertake all actions necessary to manage their risk exposure and need support in a bushfire emergency.

Community awareness is also a focus of the *ACT Elevated Fire Danger Plan.*

KEEPING THE COMMUNITY INFORMED

Electronic fire danger signs located on main arterial roads in the ACT provide information on the Fire Danger Rating.

This is one of many ways the ACT Government keeps the community informed. Other public safety communications methods include radio and television announcements, use of social media, information on the ESA website, as well as telephone and emergency alerts broadcast to mobile phones in the area under threat.

Warnings are provided to the public during a bushfire event in line with national standards through the ACT Bush and Grass Fire Warnings and Public Information Protocol.

STRATEGIES

The ACT Government will address community preparedness and safety by continuing to:

- increase the level of community knowledge, understanding and preparedness for bushfires by providing information about bushfire risk and supporting individual and community actions to manage the risk
- provide tools, information and education to assist those at risk from bushfires to make informed decisions about how to respond
- provide support for community members with vulnerabilities to ensure their safety in a bushfire event
- provide timely, effective fire danger information, advice and warnings about bushfire events across a wide range of communications methods
- monitor air quality and provide information on potential air quality and smoke impacts during prescribed burning
- partner with NSW RFS to plan and deliver community programs and community information and warnings.

The ACT Government forms a Public Information Coordination Centre during a bushfire event so the public and media are well informed while the emergency lasts. The ACT Government makes a concerted effort to reach, inform and educate community members in the BPA. For this approach to be truly effective, the community must play its part by knowing their bushfire risk and taking personal actions to minimise that risk and the consequences of bushfire events.

Residents and landholders should first assess their bushfire risk by checking if they are in the BPA.

To search for the areas included in the BPA, visit the ACTmapi website—www.actmapi.act.gov.au

Having a Bushfire Survival Plan will assist community members to:

- prepare themselves and their family for how to respond to bushfire incidents when they occur or threaten to occur
- prepare their properties to reduce the effects of bushfires
- understand the resources and equipment needed to respond to a bushfire
- understand the Fire Danger Rating System.

The ACT Government is committed to ensuring that all bushfires are responded to and extinguished as quickly as possible. However, experience has shown that in extreme fire conditions, quick suppression or containment is challenging. ESA community awareness programs will continue to reinforce that the ACT firefighting services' ability to respond may be constrained on days of elevated fire danger conditions due to multiple competing demands.

BUSHFIRE SURVIVAL PLANS

Bushfires can threaten suddenly and without warning, and so community members should be prepared to act. Residents and landholders in the BPA need to plan how they will respond. The best way to do this is to use the Bushfire Survival Plan template. This key public document enables community members to take personal responsibility for managing the risk to themselves, their families and the things they value.

More information on preparing a Bushfire Survival Plan is available on the ESA website—www.esa.act.gov.au

ENGAGING WITH THE COMMUNITY

In preparation for the 2018–19 bushfire season, ESA staff, volunteers and community groups conducted a doorknock of homes assessed as facing a higher bushfire risk.

A total of 5,493 residential homes were visited to provide face to face information about bushfire risks and risk mitigation activities for that season.

Residents were reminded to be proactive with fire management around their homes to prevent the spread of bushfires impacting on their property or their neighbour's property.

Residents were also shown how to prepare their bushfire survival plans.

The doorknock and other community education programs will continue through an annual rolling program and be regularly assessed for effectiveness.

Participants are briefed in preparation for the 2018 doorknock.

Living in the bush capital means that everyone needs to be prepared for bushfires when they occur.

During a bushfire emergency or hazard reduction burn, the ACT Government will provide timely and accurate information to the Canberra community, issuing alerts in line with the *Public Information Protocol.*[4]

This protocol adopts a scaled system of warnings and information, consistent with national standards. It uses a suite of warning and information tools.

The ESA will continue to develop communication tools to increase the effectiveness and reach of bushfire-related emergency warnings. Because traditional media channels remain important, especially for community members with vulnerabilities, the ESA will continue to work with traditional media channels to increase its ability to accurately report on bushfire issues.

In addition, the ACT will actively participate in reviews and the development of national standards[5] for public information and warnings and implement these in the ACT.

To continually improve the evidence base to inform policy and practice, the ACT Government will undertake ongoing research on community behaviour and response to fire, delivery and understanding of warnings and levels of preparation. This is currently conducted in association with research by the Bushfire and Natural Hazards Cooperative Research Centre.

Because the ACT is geographically surrounded by NSW, it is vital to maintain close links with activities in NSW. The ACT Government will work closely with the NSW Government to develop planning strategies for community engagement, delivering bushfire information, advice and warnings and sharing lessons learned for gaining community involvement in bushfire management.

4 *ACT Bush and Grass Fire Warnings and Public Information Protocol* (the Public Information Protocol), an appendix of the *Emergencies (Concept of Operations for bush and grass fires in the ACT) Commissioner's Guidelines 2018.*

5 *Australian Disaster Resilience Handbook Collection: Public Information and Warnings* (AIDR 2018), https://knowledge.aidr.org.au/resources/public-information-and-warnings-handbook/

ACTIONS	
3.1	Develop and conduct an annual community engagement program, proportional to seasonal climate variation risk, with consideration given to: » tailored outreach and engagement programs, including face to face engagement » targeted education and awareness programs » at risk groups and individuals in the community » working alongside existing community networks, organisations and directorates to reach target groups.
3.2	Continue to build on volunteer programs and engage with, and encourage people to volunteer with, the RFS, F&R Community Fire Units, State Emergency Service or other support services and organisations. Include programs to build diversity in the volunteer community.
3.3	Provide warnings and directions to the public during a bushfire event in line with the *ACT Bush and Grass Fire Warnings and Public Information Protocol.*
3.4	Work with the ACT local media, maintain formal agreements where appropriate, and engage with social media and other tools to deliver community education and awareness of bushfires.
3.5	Continue collaborative work with NSW RFS to: » review and update the Bushfire Survival Plan template, online information and app access » plan and deliver joint community information campaigns » train volunteers to participate in community engagement activities » consider collaboration to develop a national approach.

ACTIONS	
3.6	Align community engagement with the *ACT Whole of Government Communications and Engagement Strategy*, working with directorates and community service organisations as appropriate, and maintaining representation on committees.
3.7	Develop agreed research methods and commission targeted research which focuses on community behaviour and response to warnings across diverse hazards.
3.8	Maintain currency with national bushfire warning standards and technologies and update the *ACT Bush and Grass Fire Warnings and Public Information Protocol* as required.
3.9	Develop a range of communication tools for use during emergencies to provide information and streaming media.
3.10	Provide and maintain information and training for the ACT local media, as required, to ensure: » familiarity with media facilities at ESA Headquarters » effective engagement with emergency services representatives » ACT media remain qualified to report from firegrounds.

During the Pierces Creek bushfire in 2018, the Public Information Coordination Centre was active for three days.

The Public Information Coordination Centre in use during the Pierces Creek fire.

KEEPING THE COMMUNITY UPDATED THROUGHOUT AN EMERGENCY

During the Pierces Creek bushfire in 2018, the Public Information Coordination Centre was active for three days.

The Centre plays an essential role in informing the community and media in the event of a bushfire emergency.

In addition, volunteers and staff from the RFS, SES and F&R collectively doorknocked 1,400 houses in a number of southern suburbs to ensure they were prepared if the bushfire made it that far.

FIREFIGHTING OPERATIONS

4. Effective firefighting operations by skilled and supported personnel

The ACT Government will support a responsive bushfire fighting capability with sufficient numbers of skilled and motivated personnel to respond to bushfires.

The ACT is well serviced by a bushfire firefighting capability. This comprises a volunteer workforce through the RFS. It also includes a salaried workforce including the RFS, F&R and EPSDD's PCS. Volunteer F&R Community Fire Units also have an important role in supporting firefighting efforts.

These services and agencies operate jointly to respond to bushfires, whether on the fireground, in a support capacity, or as part of an IMT. The *Emergencies (Concept of Operations for bush and grass fires in the ACT) Commissioner's Guidelines 2017* and other ESA policies ensure a unified response while recognising the unique functions, skills and capabilities that each distinct service possesses.

Providing firefighters with the necessary skills to perform their roles is crucial. Firefighter training is delivered through dedicated training officers (career and volunteer) who develop, coordinate and deliver training within the RFS, F&R, and EPSDD. The ESA supports these officers through the ESA Registered Training Organisation. The ESA has also established the Women in Emergency Services Program, which promotes recruiting and retaining females in emergency services, particularly in fire services.

The ESA is strengthening IMT capability through training and development opportunities to increase the number of personnel able to perform IMT roles at all incident levels. An additional 11 Level 3 Incident Controllers were qualified and endorsed in 2018.

The ACT Government maintains Memorandums of Understanding (MOUs) and Mutual Aid Agreements with its closest neighbours to share personnel and resources when required through NSW Rural Fire Service and the National Parks and Wildlife Service. The ESA collaborates with the National Resource Sharing Centre and the National Aerial Firefighting Centre to facilitate interstate and international sharing of personnel and equipment. These interstate and international deployments provide invaluable training and experience to ACT firefighters and access to external resources if required.

STRATEGIES

The *ACT Strategic Bushfire Capability Framework* will continue to dictate the minimum capability requirements for fire danger levels. The ACT Government is committed to ensuring sufficient numbers of appropriately trained personnel to operate firefighting appliances, undertake support functions and staff IMTs as mandated by the framework.

Exisiting training requirements for new recruits will be complemented by introducing an appropriate minimum level of training and/or fireground experience to undertake fire response duties.

A focus on enhancing interoperability across the fire services will continue. While the fire services already routinely operate alongside other services, opportunities exist to increase collaboration and awareness of the capabilities each service can deliver.

Many ACT volunteer firefighters have considerable bushfire experience and key skills in a range of areas. The ESA will take a flexible approach to make better use of the allied skills of its volunteers. This will include more effective deployment of RFS volunteers to support the PCS prescribed burning program, increased joint training between RFS and Community Fire Unit volunteers and allocation of volunteers to support roles.

Recruitment and retention of volunteer firefighters will continue to be a priority of the ESA. While ESA volunteers are already well resourced and trained, and will continue to be so, further work will occur on providing more holistic support to these volunteers. More flexible training models and more support to volunteer trainers will be considered, to account for the time constraints of volunteers.

Ensuring the health and wellbeing of all firefighters, including volunteers, is a key priority for the SBMP. This will include safeguarding the mental health of members, given that bushfires may be a traumatic experience.

Firefighter graduates from an RFS training program.

Requests have increased from other jurisdictions for RAFT and arduous handcrew-qualified members to assist in managing bushfire responses. Managing volunteer fatigue associated with repeated deployments (as seen during the 2018–19 bushfire season in Victoria and Tasmania) will be a focus.

Ongoing communication with volunteers remains an ESA priority. The ACT Government will consult with volunteers to better understand the factors driving their decision to volunteer or to stop volunteering. Attention will also be given to identifying issues impeding their ability to volunteer, undertake training or respond to bushfires.

Bushfire management will continue to use the principles and systems of the Australasian Interagency Incident Management System framework. This common approach to bushfire management—using the same systems, terminology and arrangements—ensures a fully integrated response to a bushfire emergency and interoperability with other jurisdictions.

THE IMPORTANCE OF TRAINING

Bushfires are inherently dangerous, and it is vital that firefighters receive appropriate training so they can work as safely as possible.

The RFS has a comprehensive, nationally accredited recruit training program that confers new recruits with the Basic Firefighter qualification.

This qualification teaches new recruits the necessary knowledge and skills to work safely on the fireground, understand fire behavior, use techniques to suppress a fire, and use and maintain firefighting and communications equipment.

Specialist and general training opportunities allow RFS members to develop their skills in areas including advanced firefighting, driving heavy vehicles, working safely around aircraft, chainsaw operations and fire investigation.

ACTIONS	
4.1	Provide support for programs that proactively maintain health, mental health, systems of safety, fitness and wellbeing, including fatigue management, of firefighters and fire management and support personnel.
4.2	Continue and enhance existing programs to aid recruitment and retention of volunteers for firefighting and those who support bushfire activities.
4.3	Enhance the use of volunteer skills in more flexible roles.
4.4	Maintain a register for all personnel involved in bushfire operations, including membership, training and skill information.
4.5	Undertake consultation with the workforce (including volunteers) to better understand their needs.
4.6	Review and update the procedure for implementation and training in Australasian Interagency Incident Management System Version 4 as required and continue to plan and deliver training across all roles.
4.7	Maintain and enhance appropriate learning and development systems to abide by Registered Training Organisation requirements.
4.8	Determine minimum standards (training or fireground experience) for active duty firefighters.

5. The necessary equipment and resources to respond to and extinguish bushfires

The ACT Government will ensure an adequate supply of equipment and resources, supported by clear principles and systems of work, to support operations, so firefighters can respond to bushfires safely and effectively.

The ACT Government will continue to support all firefighters by providing the necessary equipment to allow them to respond to fires effectively and safely.

The *ACT Strategic Bushfire Capability Framework* articulates the resources needed to respond to various levels of bushfire risk. It takes into account the historical level of bushfire events and considers future risks, including a hotter and drier climate. The *Emergencies (Concept of Operations for bush and grass fires in the ACT) Commissioner's Guidelines 2017* specifies the stand-up arrangements for the ACT fire services based on the applicable Forest Fire Danger Index and complements the framework.

STRATEGIES

The *ACT Strategic Bushfire Capability Framework* will continue to articulate the resources to be made available depending on bushfire risk. The framework will be updated in response to changing requirements, including climate change, equipment and technology advancements and lessons learned from response operations.

Where appropriate, resources will be procured to maximise interoperability among ACT fire services and interstate fire agencies. Priority will continue to be given to equipment and resources that can be used for both bushfire mitigation and bushfire suppression and response.

Vehicle-based response capabilities will continue to be appropriately resourced. This reflects the important role of these capabilities, in hazard mitigation works and when responding to larger-scale bushfire events.

Firefighting response has seen significant technological advances in recent years. Technology plays a vital role in any firefighting operation. It identifies and locates bushfires, keeping on-the-ground firefighters informed of critical tactical information and incident developments, and assisting in incident management.

Work will continue to identify new technologies to complement the ACT's existing response capabilities. Because technology is only part of a broader capability, it needs to be integrated into response planning, procurement and maintenance in a sustainable manner.

SPECIALIST INTELLIGENCE GATHERING HELICOPTER

The ACT saw a significant boost to its bushfire response capabilities in 2018–19 with the addition of the SIG helicopter.

Jointly funded by the ACT Government, NSW RFS and the National Aerial Firefighting Centre, the helicopter provides real time incident intelligence directly to IMTs coordinating bushfire responses.

The SIG delivers a military grade capability to map the bushfire from the air in real time, complemented by infrared technology to see through smoke. This infrared technology also allows hot spots to be identified at significant distances.

The SIG demonstrated its value during the 2018–19 bushfire season when, following lightning storms, it detected seven bushfires in remote areas of the ACT and neighbouring NSW. The helicopter's ability to accurately confirm the location of bushfires allowed RAFT crews to be winched into these remote locations and extinguish the fires at a very early stage. The remote location of these bushfires meant that, without the SIG, quickly identifying and

locating the fires would have been challenging. As well, response would not have occurred until the bushfires were significantly bigger, presenting challenges for response operations.

This increased capacity to track the impact of bushfires and identify assets at risk also enhances the ESA's ability to ensure the community is appropriately informed and warned about bushfire threats.

Further work will continue to embed the SIG into RFS systems and processes, including ensuring better access by on-the-ground crews to data captured by the SIG.

Particular attention will be given to embedding the extensive capabilities of the SIG helicopter into bushfire response operations, and considering opportunities for handheld SIG capabilities to enhance and complement aerial collection.

Priority will also be given to improving relevant information flows between fireground crews and IMTs. Other focus areas include improving early detection of bushfires through automated fire detection systems and increasing support to members deployed interstate.

Aerial response capabilities will continue, in particular developing and refining ESA capabilities to support the operation of the ACT Fire Bombing Air Base and Large Air Tankers. The ACT Government will continue to support and participate in national arrangements through the National Aerial Firefighting Centre for basing and deploying aerial firefighting platforms. Increasing volunteer support for aerial response capabilities will be a priority.

Embedding testing and maintenance of resources within normal business practices will continue to be important, including routine annual testing of infrastructure and supporting capabilities.

ACTIONS	
5.1	Maintain the *ACT Strategic Bushfire Capability Framework* to assist in planning for firefighting operations and to support programs for capacity enhancement.
5.2	Plan requirements and replace vehicles and equipment to maintain firefighting capability in accordance with the *ACT Strategic Bushfire Capability Framework*.
5.3	Maintain aircraft capability and support infrastructure through National Aerial Firefighting Centre and in liaison with NSW RFS, including increasing volunteer support for aerial response capabilities, and engaging with emerging technologies where appropriate.
5.4	In conjunction with other jurisdictions, continue to develop and exercise capabilities to predict bushfire behaviour and spread, implementing the National Fire Danger Rating System supported as required by technical specialists in fire behaviour.
5.5	Undertake annual exercises to test personnel and facilities unless they have been sufficiently activated and exercised in incident response.
5.6	Review, update and distribute pre-suppression plans to provide necessary information to undertake initial fire attacks.
5.7	Investigate and develop further strategies to adopt changing technology to enhance the exchange of information, from a range of internal and external sources, between ESA Headquarters and fire crews.
5.8	Investigate and develop technologies to provide fast and accurate data related to people deployed on the fireground to support real time coordination and deployment.
5.9	Examine technical developments to improve detection of bushfires, including automated fire detection and storm activity systems.
5.10	Establish and implement an annual bushfire preparedness calendar to ensure organisational readiness for each bushfire season.

6. Extinguish bushfires when they occur

A rapid, decisive and coordinated response will provide the best opportunity to control bushfires in the shortest possible time and in a safe manner.

While the ACT Government has a rigorous program of mitigation and hazard reduction works and strategies, it is inevitable that bushfires will continue to occur. Improving the initial response to a bushfire is critical in reducing the chances of large or severe bushfires that threaten life or property.

The Emergencies *(Concept of Operations for bush and grass fires in the ACT)* Commissioner's Guidelines 2017 states that first response to all bushfires will be by the nearest available and most appropriate resource, irrespective of the service's jurisdiction. The guidelines require that any fire agency must take appropriate action to suppress any fire nearby if it is safe and practicable to do so.

A key determinant in containing a bushfire is speed of response. The *ACT Strategic Bushfire Capability Framework* establishes capability targets relating to the deployment of assets. The framework also establishes deployment level targets based on bushfire size and complexity.

The ACT Elevated Fire Danger Plan outlines the standing and emergency arrangements for an all-agencies approach to elevated fire danger conditions in the ACT.

A KEY DETERMINANT IN CONTAINING A BUSHFIRE

PIERCE'S CREEK BUSHFIRE

In the afternoon of 1 November 2018, a car was set alight. The fire quickly spread into steep, thickly vegetated terrain with significant fuel loads.

In line with ESA practice, the first response to all bushfires was by the nearest available, most appropriate resource, and RFS and F&R crews and vehicles were quickly dispatched to the fire. By early the next morning, the fire had spread to 54 hectares.

The nature of the terrain and vegetation and fire activity meant priority was given to containing—rather than directly attacking—the fire. Containment lines were established and strengthened over the following days to prevent the fire from spreading. At its peak, approximately 80 firefighters were responding to the fire, along with 36 trucks, 6 dozers and other heavy plant, 5 aircraft, an IMT and other supporting resources.

The fire was substantially contained by 4 November, with response operations ceasing on 19 November. A total of 208 hectares of pine forest were burnt.

A light unit from Hall RFS Brigade operating at the Pierces Creek bushfire.

INCIDENT MANAGEMENT IN THE ACT

Bushfire incidents in the ACT are managed by a team of trained and qualified specialists who work together in the Incident Management Room at ESA headquarters.

The room underwent a major upgrade in 2018 informed by learnings from previous incidents, exercises, advice from independent experts and the inspection of facilities interstate.

Upgrades included the creation of designated workstations for each functional role and information technology and technical improvements. This included upgrades to the electronic knowledge wall to display incident-related information from functional areas and other sources such as the Bureau of Meteorology and social media.

The Incident Management Room is aligned to facilitate enhanced information flow to and from key positions such as the Incident Controller, to provide the information, resources and people that the Incident Controller needs to make critical decisions during an event they are managing.

The upgraded Incident Management Room provides the Incident Controller with easy access to the functional officers within a IMT. The membership of an IMT varies with the nature and scale of each incident.

STRATEGIES

Response operations will continue to be undertaken in accordance with the *Emergencies (Concept of Operations for bush and grass fires in the ACT) Commissioner's Guidelines 2017 and the ACT Strategic Bushfire Capability Framework.*

Targets have been set for deploying firefighting resources to a bushfire and containing the bushfire. The focus on containing, rather than extinguishing, reflects that a bushfire can be safely controlled within containment lines and pose no further risk to life or property, despite the fire not being fully extinguished.

Each fire service has a statutory mandate to protect and preserve life, property and the environment

Fire services use various platforms to communicate with members. ESA will develop a standardised whole-of-agency availability and communications platform for non-operational activities and pre-incident communications with staff and volunteers. This collaborative approach will facilitate interagency cooperation and visibility of available resources. It will also support the notification and timely turnout of volunteers to deliver emergency and non-emergency response services to the ACT community.

Each fire service has a statutory mandate to protect and preserve life, property and the environment. Protecting human life and safety is the highest priority during any bushfire response. This includes the life and safety of both members of the community and members of the fire services undertaking the response. Reducing bushfire damage to property and the environment is also a priority, but will not be prioritised over human life and safety.

Training and maintaining RAFT-qualified members will continue to be a focus of the RFS. These members deliver a vital response capability, both in the ACT and increasingly in other jurisdictions in which they are highly valued for their professionalism and expertise.

More work will be undertaken to ensure that RAFT training remains best practice and benefits from training developments in other jurisdictions. This will include working nationally to ensure a common understanding and awareness of the competencies required to undertake RAFT and other firefighting tasks to support significant bushfire events.

To ensure a seamless fire management response, the ESA and EPSDD have developed an MOU outlining their respective roles and responsibilities in coordinated response operations and broader fire management.

Remote Area Unit capabilities, incorporating RAFT and arduous hand crews comprising career and volunteer firefighters, will continue to play an important role by enabling rapid attendance at remote bushfires not easily accessible by vehicles.

The RFS will continue to ensure that RAFT members receive the most appropriate and effective resources to undertake this role, with a focus on enhancing operational support arrangements. Consideration will also be given to the potential role of Rapid Aerial Response Teams within the ACT.

To assist preparedness, the ESA has identified suitably qualified individuals from across the fire agencies and wider ACT Government who can fill key leadership roles within an IMT and published that list within the *Emergencies (Concept of Operations for bush and grass fires in the ACT) Commissioner's Guidelines 2017.* The ACT Government will maintain and expand its IMT capability to remain prepared to manage an emergency at short notice.

ACTIONS	
6.1	During periods with a Fire Danger Rating of High or above, response resources will be deployed to bushfires within the following timeframes after the ESA becomes aware of the bushfire: » 30 minutes, for fires within the BAZ » 45 minutes, for rural fires outside the BAZ.
6.2	95% of bushfires will be contained by the first response shift deployed (within the first 12 hours of the response).
6.3	Proactively maintain the capability to operate a full IMT for the first two shifts.
6.4	Maintain strategies and resources for RAFT, including enhancing operational support processes, and investigate expansion of the RFS Remote Area Unit framework to incorporate Rapid Aerial Response Teams and arduous hand crews.
6.5	Review the *ACT Elevated Fire Danger Plan* to reflect lessons learned and changes in the strategic and operational environment.
6.6	Develop a whole of agency availability and callout application.

ACTIONS	
6.7	Engage with research institutions who undertake applied research into the effectiveness and comparative productivity of firefighting methods.
6.8	Review and maintain the MOU between EPSDD and ESA on roles and responsibilities for fire management.
6.9	Enhance response related data capturing and reporting mechanisms and systems to better support assessment of targets of the *ACT Strategic Bushfire Capability Framework.*
6.10	Review the *ACT Bushfire Management Standards* to reflect changes to legislation, national standards and information required by land managers, utilities, planners, developers, government directorates and the community, and make as a Notifiable Instrument.
6.11	Actively participate in forums, such as a regional bushfire management committee in accordance with formal arrangements between ACT and NSW for cross border response and fire management planning.

BROAD AREA FUEL REDUCTION AND FIRE ACCESS

7. Broad area bushfire fuel reduction across the natural and rural landscape of the ACT

Broad area fuel reduction practices will be used to establish and maintain a range of differing fuel loads across the broader natural and rural landscape of the ACT, to assist in suppressing bushfires and reducing the impact of bushfires on life, property and the environment.

Fuel is one of the basic elements required to sustain a bushfire. While other factors, such as topography and weather, influence fire spread and intensity, the fuel load is the element most easily manipulated for fire management. Reducing fuel loads assists with suppressing bushfires during favourable weather conditions.

The fuel load at any location is determined by many factors, including vegetation type, climate, regrowth rate, recent weather events and the time since and intensity of the last fire.

With climate change, bushfires in Australia have become larger, more intense and more frequent. These can lead to a more homogenous landscape, both in terms of ecosystem functions and fuel load, which may include dense regeneration with increased fuel load. This, in turn, threatens the diversity of communities and increases the risk of intense fires in regenerating landscapes.

To meet the requirements of the SBMP, EPSDD prepares a five-year RFMP with a 10-year outlook. The RFMP balances bushfire fuel management with all other values for which the natural estate is managed in the ACT, including protecting important assets such as ecological, cultural and heritage sites.

The RFMP uses advanced modelling tools and current and historical data to identify the location and timing for bushfire fuel management operations to leverage the greatest strategic advantage for the ACT community.

EPSDD delivers RFMP actions through BOPs that describe detailed fuel reduction activities. BOPs are also prepared by other ACT directorates, national land managers and rural landholders. They aim to reduce bushfire fuels through applying fuel treatments such as prescribed burning, slashing, grazing and physical removal.

This fuel reduction program addresses the recommendations of the McLeod Inquiry[6] and Coroner Doogan's Inquiry[7] into the 2003 Canberra bushfires. It is at the forefront of best-practice landscape fire management nationally.

The program creates a mosaic of bushfire fuel ages across the wider natural and rural landscape. Bushfire fuel age is based on the time since the last bushfire in a vegetation community. It recognises that the bushfire fuel load will vary in these communities over time, and correlates to the bushfire hazard it presents.

6 Inquiry into the Operational Response to the January 2003 Bushfires.
7 ACT Coroner's Court 2003 Bushfire Inquiry.

The practical implementation of planned burning (also known as prescribed burning or hazard-reduction burning) focuses on establishing Strategic Firefighting Advantage Zones (SFAZs). These aim to reduce the intensity and spread of fires across large areas of landscape and contribute to the success of firefighting under moderate weather conditions. Fuel reduced areas will also help to lessen the impacts of fire on water supplies (water yield and quality) by reducing the size and intensity of fire in water catchment areas.

Broad area fuel reduction takes into account the dynamic nature of natural ecosystems and requires clear objectives and an adaptive approach to fire management. Land managers will use the best available knowledge to identify appropriate fire management practices, promote ecological values and protect sites of cultural and heritage significance.

With differing fire and non-fire-related management objectives, a range of treatment strategies are applied to establish SFAZs, including:

- broad area, fuel-reduction burning, aiming to reduce fuel across multiple landscape elements
- managing green breaks in forested areas
- targeting broad area grazing
- slashing of rural and arterial roads, easements or boundary trails
- identifying naturally occurring areas of vegetation with inherent fuel loads.

REDUCING BUSHFIRE FUEL HAZARDS

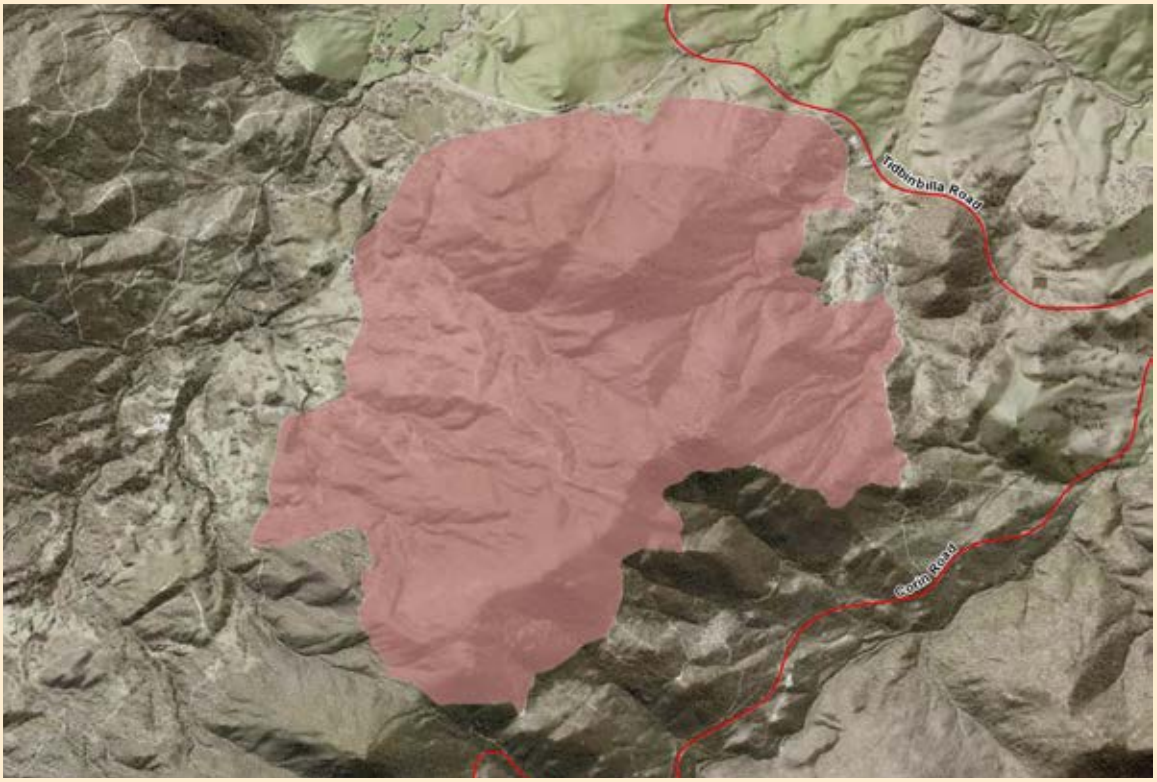
Reducing the level of bushfire fuel load is critical in reducing bushfire risk because it can often be modified in advance to reduce the impact of bushfires.

One method of reducing bushfire fuel hazards is prescribed burning.

Others include fire trail maintenance, slashing, removal and grazing.

Members of the Jerrabomberra Brigade and PCS igniting a prescribed burn.

THE ABORIGINAL FIRE MANAGEMENT ZONE



The Aboriginal Fire Management Zone encompasses areas and sites of cultural significance. Cultural burns are designed to be undertaken with and by local Indigenous community members, with the support of the Murumbung Ranger team from PCS and the Caring for Country team.

STRATEGIES

Planned burning will be used as the principal management tool to reduce bushfire risk, thereby establishing and maintaining a mosaic of fuel loads across the landscape. This will help reduce the impact of bushfire on life and property in ACT rural and urban areas. It will also reduce the impacts on water catchment and environmental values in the Namadgi National Park and ACT nature reserves.

The RFMP identifies the location and timing of fuel reduction activities in SFAZs across government-managed land over 2019–2029. It uses ecological requirements and guidelines established by EPSDD. Specific factors considered include timing, location, and the type and intensity of fuel-reduction activities needed to achieve a range of bushfire fuel ages across the landscape.

Where appropriate, planned burning will also be used to maintain or improve ecosystem health and resilience, recognising that such fires frequently have twofold effects in achieving biodiversity benefits and reduction of bushfire fuel.

Land managers will use the best available knowledge to identify appropriate fire management practices, and to promote or protect ecological values. This may include excluding prescribed burns from sensitive ecological areas where possible.

The location of SFAZs will be dynamic, not fixed, using an evidence-based approach. This will ensure maintenance of:

» strategic areas of low fuels in the landscape, without the need for repeatedly burning the same area

» a fuel age mosaic across most of the landscape in the longer term.

Standards relating to these treatments of SFAZs are identified in the *ACT Bushfire Management Standards.*

Implementing broad area fuel reduction presents risks, such as the potential for planned burns to escape containment lines or burn at a higher intensity than planned. In undertaking fuel-reduction activities, these risks will be considered against the known and more widespread consequences of uncontrolled bushfires under elevated fire danger conditions.

Climate change is also impacting on the window within which prescribed burns can be carried out, with longer fire seasons, lower rainfall, decreasing fuel moisture levels and other factors all playing a part.

Anticipated climate change impacts are reflected in the activities planned through the RFMP. More severe climate impacts may need existing broad area fuel reduction strategies, activities and assumptions to be reassessed. This may include the need for increased access to land to allow for prescribed burns on a smaller scale.

Factors that will be considered in implementing broad area fuel reduction activities include firefighter and public safety, forecast weather conditions and the potential air quality and smoke impacts. In water catchments, specific consideration will be given to the impacts on water supply and water quality.

A new initiative for the 2019–2020 RFMP proposes the Aboriginal Fire Management Zone[8] within the Tidbinbilla Nature Reserve. This zone has been proposed to encourage cultural burning and other cultural activities to support traditional use by the local Indigenous community. These include encouragement of bush tucker, production of fibre for weaving, access to bark, traditional medicines and other materials, maintenance of a desirable vegetation structure, and connection of community with country.

Cultural burning is usually compatible with ecological requirements. Where there is incompatibility with the management of rare or threatened species, habitats or communities, careful placement and delineation of zone boundaries may be used. Cultural burns will vary in size and frequency to meet cultural objectives. They will be conducted in partnership with EPSDD and ESA.

Through the ACT-NSW Cross-Border Fire Group, the ACT will work with NSW to implement integrated cross-border fuel management strategies on public and private land. This will be achieved through surrounding regional bushfire risk management plans (for private land) and fire management strategies for the Brindabella National Park.

ACTIONS	
7.1	ACT Government land managers and other entities in the BAZ must prepare, submit and implement a BOP, consistent with the *ACT Bushfire Management Standards*, and review it at least every two years.
7.2	Audit and assess BOP fuel management treatments to ensure compliance with the *ACT Bushfire Management Standards*.
7.3	For all SFAZs in the RFMP, land managers will establish baseline data and report data on the area treated, fuel hazard assessment, vegetation type and other matters as appropriate.
7.4	Review the RFMP and develop the location and timing of fuel reduction activities in SFAZs for 2024–2029.
7.5	Continue research into post fire vegetation response, fuel age distributions and associated fuel loads to inform the RFMP and to optimise landscape level objectives that balance fuel age distributions and ecosystem function.
7.6	ACT directorates to share data with each other and NSW on treatments, fuel hazard assessments, vegetation types and other matters as appropriate in relation to public land management.
7.7	In line with the ACT Aboriginal and Torres Strait Islander Agreement 2019–2028, 'Community Leadership' core area, recognise and use the cultural expertise of traditional custodians in the sustainable management of country.
7.8	Fire management activities will recognise the distribution and significance of environmental assets, such as threatened species locations.

8 ACT Aboriginal and Torres Strait Islander Agreement 2019–2028.

8. Access for vehicles and firefighters to undertake bushfire fighting and fuel reduction

Government and private land managers will work together to provide a network of fire trails and helipads that provide safe and effective access for firefighting and fuel reduction operations.

Fire access is provided by a network of public roads, fire trails, walking paths and constructed helipads on government and privately managed land. Well-maintained roads and trails are essential for a swift response, and for community safety. Importantly, it makes it safer for firefighters to enter and leave a fireground.

Well-planned and prepared access can reduce environmental and economic impacts and the recovery requirements of potentially higher-impact track construction during bushfires.

Well-maintained access also means fire containment and suppression can be conducted and outcomes improved under more varied weather conditions. Vehicular tracks, roads and walking tracks also potentially act as control lines for containing bushfires and conducting prescribed burns.

The ACT's fire access network has been firmly established under previous SBMPs, planned through the RFMP and delivered through BOPs. Developments have included significant upgrade and construction works in Namadgi National Park and the Bullen Range, as well as ongoing maintenance and upgrades in and around Canberra. This work is ongoing.

STRATEGIES

The *ACT Bushfire Management Standards* prescribe standards and classifications for fire trails, public roads, rural fire trails and aerial access in the ACT.

In addition to bushfire fuel reduction operations, the RFMP details works to be carried out on fire management access networks on the land managed by EPSDD and Transport Canberra and City Services Directorate. These works include fire trail construction, upgrade and maintenance to provide strategic access across the ACT landscape.

Further construction, maintenance and upgrade activities are planned under the RFMP 2019–2029 in line with climate change expectations and EPSDD bushfire modelling.

New fire trails and aerial access points will be constructed only where they provide a strategic benefit, and where the financial and environmental costs of construction and maintenance do not outweigh the benefits for bushfire management.

Given the proximity of people and property to the urban edge of Canberra, a relatively high density of good-quality fire trail access will be provided in these areas for safe and fast initial attack of fires and bushfire fuel management. At the urban edge, all new developments must be constructed with a well-designed, sealed, public road network, with edge roads providing a layer of protection and a means of access and egress for firefighters and residents. This is described under *Objective 11: Integrated bushfire protection at the urban edge.*

For ACT rural properties, farm trails identified in Farm FireWise plans will allow rapid initial access. These plans also detail areas on properties unsuitable for vehicular access. See *Objective 2: Planned fire management on all private rural lands.*

The ACT Road Centreline data project, initiated in 2013, provides consolidated fire access data for the Territory. This data will continue to be updated as new trails are constructed or upgraded. The data is publically available through ACTmapi.

ACTIONS	
8.1	Government land managers will identify in BOPs, the works to be carried out on fire management access networks on their land, including fire trail constructions, maintenance and upgrades.
8.2	Audit and assess BOP access management works to ensure compliance with *ACT Bushfire Management Standards.*
8.3	Government land managers will report the implementation of access management works in two parts: » against the timeframe of the BOP » cumulative, against the longer term actions identified in RFMPs.
8.4	Review and maintain the fire trails register in the ACT Road Centreline Database.

THE IMPORTANCE OF MAINTAINED FIRE TRAILS

Fire trails are maintained to allow safe access by firefighters and vehicles.

It is important that trails remain free from fuel hazards because firefighters need to gain access to fire as quickly as possible. Safe exits are also essential.

The fire trail in use during a prescribed burn at Aranda Nature Reserve.

FIRE TRAILS AS CONTROL LINES

Using the fire trail at Gossan Hill as a control line during a prescribed burn.

ADAPTIVE MANAGEMENT AND CLIMATE CHANGE

9. Adaptive management of current and future bushfire risks

The ACT Government will adopt an adaptive management process to address increasing bushfire risks, including climate change, and support continuous improvement based on sound research, modelling, monitoring, evaluation and lessons learned.

The ACT landscape and weather can interact to create extreme bushfire conditions, which may allow bushfires to impact on the urban edge and rural areas of the Territory. Because there are limits on how much the risk presented by these fires can be reduced, the ACT Government commits to the continuous improvement of its bushfire risk management strategies through ongoing research, analysis and adoption of an adaptive management approach.

Adaptive management is a structured, iterative process of sound decision making which aims to reduce uncertainty over time through monitoring and evaluation. This model is ideally suited to dealing with the impacts of climate change, which holds uncertainty about future conditions to be experienced by fire and emergency services and the community.

The principles and application of adaptive management apply to all elements of bushfire management. These include ecological monitoring of the effects of fuel management, how firefighters respond to and manage bushfires, and how well the government and community recover from disaster events. All strategies in this plan incorporate elements of adaptive management in their delivery.

The *ACT Climate Change Strategy to 2025* provides the basis for an integrated, whole-of-government approach to adaptation policies and plans.

Planning for climate change is one challenge to which the ACT Government and community need to respond. According to an Australasian Fire and Emergency Services Authorities Council report[9], climate change is expected to produce higher mean and extreme temperatures leading to longer fire seasons and more fuel available to burn. This will provide conditions for greater frequency and higher than average intensity bushfires, especially in south eastern Australia.

Climate change is complex with much still unknown. Addressing uncertainties in future projections of bushfire risk is the subject of ongoing research in Australia and overseas. The ACT Government needs to plan for plausible climate futures and related bushfire risks. Through its adaptation responses, the ACT continues to improve resilience to climate impacts of the community and built environment.

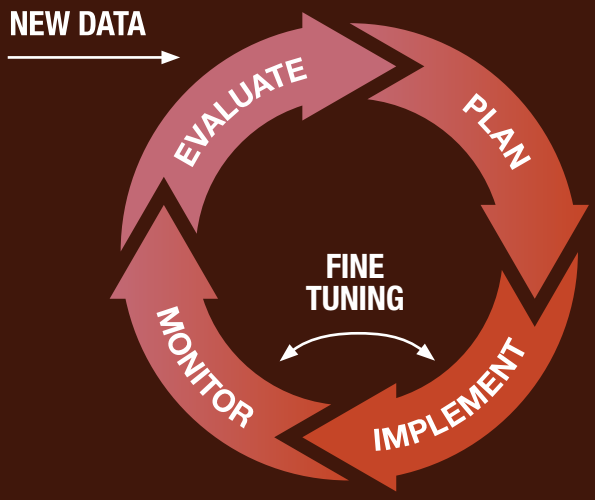
9 Australasian Fire and Emergency Services Authorities Council: Climate Change and the Fire and Emergency Services Sector, September 2009.

The Adaptive Management Cycle

Adaptive management requires:

- establishing clear objectives based on current knowledge, review of outcomes of actions, and a commitment to change or refine management actions
- monitoring of management actions to establish if intended outcomes are achieved, or if changes to strategies and actions are required.

The approach may include experiments or targeted research to determine the best method to be adopted.



EVALUATE	the success of the plan
PLAN	where we want to be
IMPLEMENT	the strengths and actions of the plan
MONITOR	the impacts of our actions

STRATEGIES

Investment in ongoing research, evaluation and monitoring programs is a critical element of adaptive management. To continually improve bushfire risk management, the ACT Government will review, monitor and research its past, current and future strategies for fire management to identify gaps and implement changes and better practices.

Under the *ACT Climate Change Strategy to 2025*, it will become increasingly important to reflect climate change projections and risk vulnerabilities in disaster and emergency prevention, preparedness, response and recovery, especially for extreme heat, bushfire and flash flooding. These strategies will extend to the community to encourage community preparedness for climate risks through community engagement and outreach activities.

An important element of this is to work with local traditional custodians and the broader Aboriginal and Torres Strait Islander community to integrate traditional knowledge into landscape management, as discussed in *Objective 7: Broad area bushfire fuel reduction across the natural and rural landscape of the ACT.*

The ACT works closely with research institutions in Australia and overseas. The Territory will continue to contribute resources and capability to support the national bushfire research undertaken through the Bureau of Meteorology, Geosciences Australia and the university sector in the ACT and NSW. The ACT Government will also continue to participate and provide financial support to the research program of the Bushfire and Natural Hazards Cooperative Research Centre and partner with the Australasian Fire and Emergency Services Authorities Council which collaborates and shares information with fire agencies.

EPSDD will undertake coordinated bushfire research to inform and adapt programs for fire management in the ACT. Support will continue for research from which cohesive, evidence-based policies and strategies can be developed.

Community service organisations will also provide an ongoing contribution to monitor and evaluate the impact of this plan. It is important that the ACT Government establishes and maintains the necessary links with these organisations as part of its adaptive management approach to bushfire management in the Territory.

The impact and effects of the SBMP will be monitored and reviewed to adapt and adjust strategies as required, and to form the basis of reporting to the government and community.

ACTIONS	
9.1	Continue to undertake research into fire behaviour and modelling, firefighting methods and firefighting performance for fires within the ACT, and reflect findings in fire management plans and operational procedures where appropriate.
9.2	Undertake research and monitoring to target biodiversity conservation and understanding of appropriate fire regimes, including: » efficacy of mitigation measures, such as maintaining unburnt buffers along riparian zones and aiming for low intensity and patchy burning within the prescribed burn perimeter » the relationship between fire history, fauna diversity and abundance, and habitat structure in a range of vegetation communities » effects of large-scale planned fires in aquatic ecosystems.
9.3	Continue to monitor critical global climate systems and patterns (for example, Southern Oscillation Index) that may significantly affect bushfire management strategies over the life of this plan.

ACTIONS	
9.4	Undertake ongoing research and monitoring of potential impacts of climate change upon the bushfire risk facing the Territory, using a variety of inputs, to produce long term modelling of impacts.
9.5	Reflect climate change projections and risk vulnerabilities in disaster and emergency prevention, preparedness, response and recovery, particularly for extreme heat, bushfire and flash flooding.
9.6	Based on climate change modelling and global climate systems, review and modify strategies for operational doctrine, community awareness, fuel management, response and capability as required.
9.7	Embed climate change research into seasonal and operational risk assessment for bushfire fighting.
9.8	Develop a governance plan to enable effective oversight of the delivery of the SBMP.

CLIMATE CHANGE AND THE CHANGING ENVIRONMENT

The changing composition of the fuels in the BPA increases and changes bushfire risk. The change in fuel composition is a result of changing land management practices, weed invasion and climate change. Applying an adaptive management approach will help the ACT address this changing risk profile.

Invasive species, such as African Love Grass, have different fire behaviour from native grasses and the capacity to pose a higher fire risk in winter.

LAND-USE PLANNING

10. Land-use policy and planning that reduces bushfire risk

The assessment and mitigation of bushfire risk through effective land-use policy and planning will reduce the exposure of built and natural environments to bushfire.

Land-use planning is a key prevention tactic for managing fire risk, particularly on the vulnerable urban edge.

The Territory's planning and development regime is based on the concept that bushfire protection is a shared responsibility between the ACT Government, landholders and the public. The responsibility for risk mitigation does not rest solely with government or landholder.

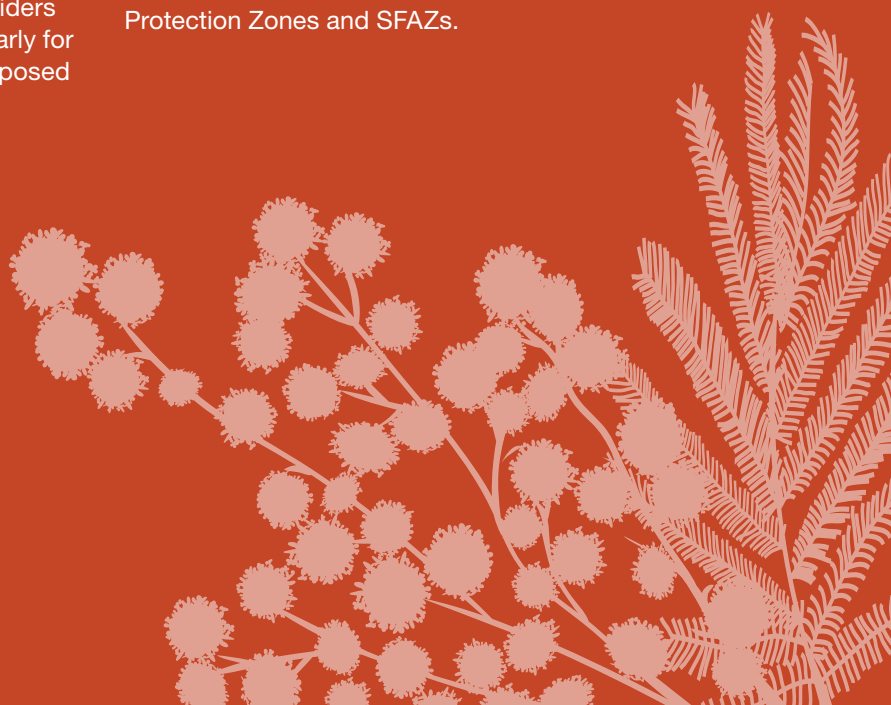
A hierarchy of strategic, operational and tactical plans and maps prescribes the ACT's planning and development requirements. They provide a Territory-wide, tenure-neutral approach that reflects the principal purpose for land-use and takes ecological, cultural and heritage considerations into account.

In the ACT, the Planning and Development Act establishes the Territory Plan. The Territory Plan is the key statutory planning document in the ACT and defines the administration of planning in the Territory. Land-use planning in the ACT considers bushfire risk at all levels of planning, particularly for areas susceptible to bushfires and areas proposed for urban development.

The Planning and Development Act also requires that areas of public land be managed in accordance with a public land management plan for that area. Among other things, public land management plans detail the fire management objectives and the general risk mitigation activities to be undertaken for that land.

The Territory Plan's *Planning for Bushfire Risk Mitigation General Code* provides guidance to mitigate adverse impacts from bushfires in the ACT. In particular, the code addresses planning and development processes. The ACT Government takes it into account when determining development applications for estate developments. The bushfire risk mitigation controls in this Code will be revised during the review of the Territory Plan.

These planning frameworks are supported by fire management zones, which identify key areas that warrant specific fuel management actions to reduce risk to the urban area. These include Asset Protection Zones and SFAZs.



STRATEGIES

The ESA will continue to provide strategic advice to government directorates and developers about bushfire risk. This includes its role as the referral authority for independent, site-specific risk assessment for new estate developments.

As part of this role, and to increase awareness and consistency in approach to bushfire risk management practices, the ESA will continue to conduct annual planning forums to identify and highlight future bushfire planning issues.

The ESA and ACT fire services more broadly will continue to support the bushfire mitigation and fire management activities required under management plans for Territory land. A particular focus will be on fire mitigation activities required under the *Lower Cotter Catchment Reserve Management Plan 2018,* noting the importance of the area's water supply and conservation values.

While this plan does not apply to national land managers (such as the Department of Defence and CSIRO), the ESA will continue to work cooperatively with those managers to ensure collaborative fire management practices are undertaken, including the preparation of BOPs for national land.

ACTIONS	
10.1	Continue to review and refine the BPA map as required to reflect changes in land-use, adopting evolving technologies, where appropriate.
10.2	The ESA and EPSDD will finalise the review of current Fire Management Zones within the first 12 months of the Plan, including consideration of budget, resource and ecological implications, with appropriate consultation with stakeholders and the community.
10.3	Continue to update Fire Management Zones as required to reflect significant changes such as unplanned bushfires or changes to the location or extent of assets.
10.4	The ESA and EPSDD will commence a review of Fire Management Zones in the third year of the Plan (2021–22) to support synchronisation of SBMP v5 and the RFMP.
10.5	Review the BAZ as required to reflect changes in land-use.
10.6	Advise on bushfire risk and mitigation strategies for developments, variations to the Territory Plan, structural plans and other strategic land use planning.

ACTIONS	
10.7	Hold an annual forum between directorates and other stakeholders to identify and highlight future planning requirements and potential constraints.
10.8	ACT Government directorates to support the fire management activities for bushfire mitigation contained in the *Lower Cotter Catchment Reserve Management Plan 2018*, noting the importance of the area's water supply and conservation values.
10.9	Work with national land managers on the development of their BOPs to ensure consistency with the objectives of the SBMP and complementary bushfire management actions.
10.10	Revise bushfire risk mitigation planning controls as part of the comprehensive review of the Territory Plan.
10.11	In consultation with stakeholders, ESA and EPSDD will explore the adaptation of residual risk modelling to inform bushfire mitigation in the ACT.

11. Integrated bushfire protection at the urban edge

A range of complementary measures will be used to achieve integrated bushfire risk reduction on the urban edge.

The ACT is unique among Australian jurisdictions in that its rural/urban edge is a clear, fixed boundary, unlike in other jurisdictions where the boundary is less defined. This concentrates a significant number of people in an exposed, bushfire-prone area that has a perimeter of more than 500 kilometres. This concentration renders it vital for integrated measures to be undertaken to protect residents in these areas.

The ACT Government has longstanding initiatives to reduce risks posed by urban expansion or densification in bushfire-prone areas. Recent changes to planning laws will help address risk for buildings in the BPA.

Planning the design and layout of new estates is an extremely effective way of reducing the bushfire risk facing residents. Appropriate estate design can mitigate bushfire risk and increase community resilience while assisting fire response. The ACT planning framework, including the Planning and Development Act, ACT Planning Strategy 2018, Territory Plan, and bushfire-specific planning and construction requirements, has effectively minimised the bushfire risk in new greenfield estates.

These estate design principles are supported by fire management zones, which identify key areas on Territory and rural land that require specific fuel management actions to reduce risk to the urban area.

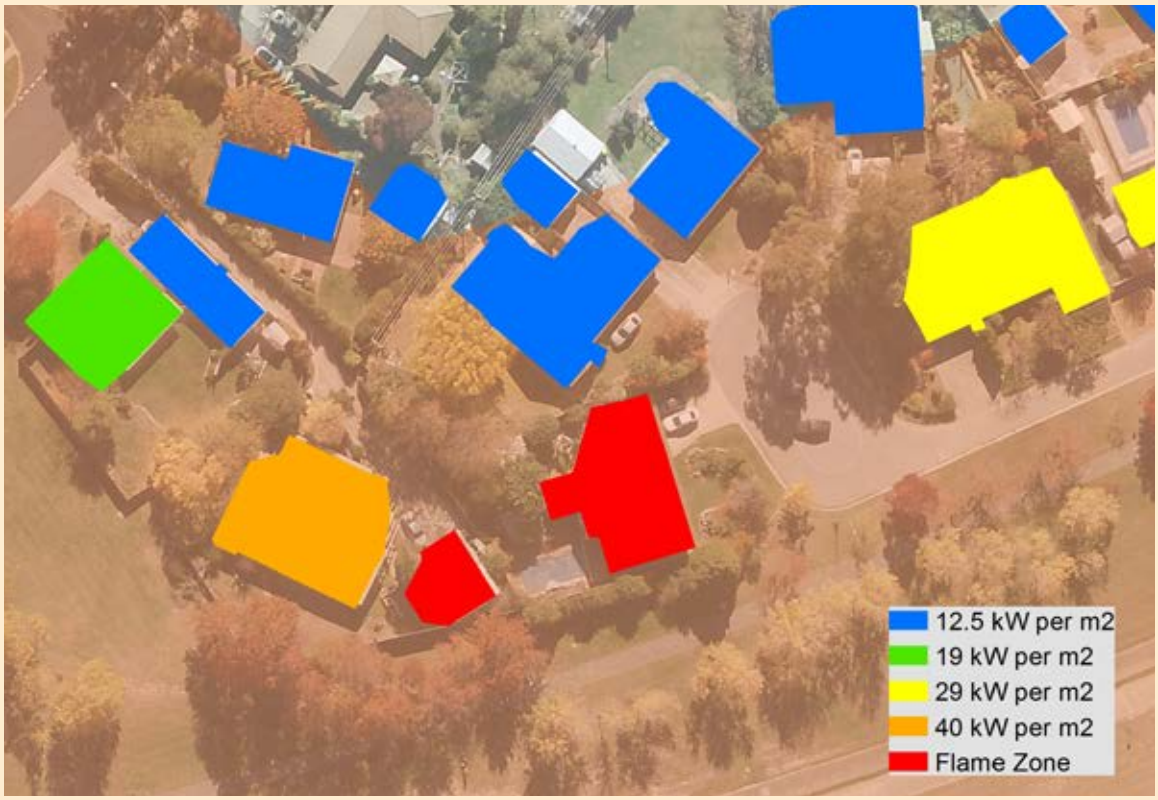
STRATEGIES

The ESA will continue to be the principal agency for providing strategic advice to government directorates and developers about bushfire risk. This includes its role as referral authority for independent, site-specific risk assessment for new estate developments, non-residential buildings and a range of fire-related matters under the *Building Act 2004.*

The BPA will continue to be regularly reviewed and refined to reflect changes in land-use and tenure, as improved vegetation mapping becomes available, and to address local and site-specific issues.

The design and layout of subdivisions and developments must reduce the vulnerability of dwellings and residents from the impact of a bushfire. New greenfield estates must provide that all blocks on which residential uses are permitted must not face a BAL greater than 29. As a standard approach, any intensively managed Inner Asset Protection Zones required to achieve that level must be located within the footprint of the area to be developed.

Sensitive-use developments which concentrate members of the community at high risk from bushfire are not permitted in the BPA without agreement by the ESA Commissioner. These include, but are not limited to, schools, hospitals, nursing homes, supportive housing, aged care facilities, retirement villages, childcare centres and tourist accommodation. Development must also satisfy revised bushfire risk mitigation planning controls proposed to be introduced as part of the comprehensive review of the Territory Plan.



Results from the AutoBAL model showing the bushfire risk facing individual buildings

UNDERSTANDING THE BUSHFIRE ATTACK LEVEL

The AutoBAL automated model assesses the BAL for buildings located in the BPA. The BAL measures the bushfire risk at that location, based on distance from, and type of, vegetation and slope.

The automated model allows for large-scale assessments in much less time than with manual assessment. The tool processes 16,000 assessments in one hour.

AutoBAL will be used to assist with more effective targeting of bushfire mitigation practices, including community education and awareness and fuel management. It will also reduce building assessment requirements on the community, particularly for areas modelled as having BAL Low or BAL 12.5 ratings.

AutoBAL results will be made available on the ACTmapi website—www.actmapi.act.gov.au

The default standard for all new estate developments includes a continuous sealed edge road surrounding all blocks on which residential use is permitted. Edge roads surrounding developments can significantly reduce the bushfire threat faced by dwellings at the urban edge, and provide for a permanent reduction in BAL ratings for those dwellings. Edge roads also facilitate firefighter access to the urban edge.

The *ACT Bushfire Management Standards* will continue to describe specific design and planning requirements. These include the necessary specifications for Asset Protection Zones and requirements for access standards, such as internal public roads, and ensure adequate turning circles for emergency vehicles and new fire trails.

The standards will also describe:

» requirements for emergency and evacuation arrangements for new and existing developments, particularly for developers and operators of sensitive-use developments

» water infrastructure requirements to support effective fire response operations.

The standards will also support audit programs to assess fuel management and access works conducted in an Asset Protection Zone or under a BOP.

For homeowners and builders, new dwellings, knock-downs or rebuilds and other substantial extensions or alterations within the BPA must comply with the bushfire-related construction requirements in the *Building Code of Australia.* This will enhance the ability of dwellings to withstand the impacts of bushfires, either by improving their ability to withstand contact with direct flame or radiant heat, or by reducing the likelihood that windborne embers will ignite them. The ESA will support the application of these building requirements through the automated BAL assessment model (AutoBAL), the results of which will be publicly available on ACTmapi.

Urban vegetation guidelines and advice on how to increase building resilience will be developed to raise awareness among homeowners of appropriate landscaping that will reduce bushfire risk in established and newly developed blocks. These guidelines will be consistent with broader ACT Government tree canopy targets.

ACTIONS	
11.1	Audit and assess BOP fuel management and access works in Asset Protection Zones against the *ACT Bushfire Management Standards.*
11.2	Support government tree canopy targets through the development of urban vegetation guidelines to limit the risk of fire spread and other measures to increase infrastructure resilience.
11.3	Ensure aged care facilities, schools, hospitals, childcare centres and other establishments have the necessary plans in place for managing emergencies, including evacuation during bushfire emergencies. These requirements will apply to both government and the non government sectors.
11.4	New or substantially altered residential properties in the BPA must apply the bushfire related construction requirements in the *Building Code of Australia.*
11.5	New greenfield developments provide that blocks on which residential uses are permitted must not face a bushfire risk greater than BAL 29, with any intensively managed Inner Asset Protection Zones required to achieve that level to be located within the footprint of the area to be developed.
11.6	Edge roads surrounding development are mandated as part of new bushfire risk mitigation planning controls under the Territory Plan, except where the ESA Commissioner agrees an alternative option.
11.7	For new estate development, the ESA Commissioner must approve any blocks within the Bushfire Prone Area on which sensitive and vulnerable uses (such as schools or aged care facilities) are proposed to be located.

BUSHFIRE RECOVERY

12. Supported communities for bushfire recovery

Recovery from bushfire may start while bushfire response operations are underway and may need to continue for a long time afterwards. Recovery will encompass actions to address the social, economic and environmental impacts of bushfires, as they affect individuals, the broader community and environment.

Recovery is an integral component of bushfire management. Response, relief and recovery are no longer considered discrete phases, as communities and practitioners plan for what happens before, during and following an emergency event.

The ACT Government is committed to ensuring that all bushfires are responded to and extinguished as quickly as possible. However, experience has shown that in extreme fire conditions, quick suppression or containment is challenging.

Decisions made during the early stages of such a challenging bushfire response can have consequences for a community and the trajectory of recovery. For this reason, relief and recovery activities in the ACT are integrated with response activities and start as soon as the effect and consequences of the emergency are anticipated.

Under the Emergencies Act, the ACT Government is entrusted to reduce any resulting harm to the physical, social, cultural and economic environment of the Territory from the impacts of a bushfire.

The ACT Government's recovery arrangements have been designed to ensure that the appropriate resources (including people), governance, systems and processes are in place to reduce the impacts experienced by the community following an emergency.

The *ACT Recovery Sub-Plan (2019)* guides recovery actions in the Territory during and after an emergency. It assists agencies involved in recovery to prepare for, coordinate and undertake activities aimed at successfully recovering from the impacts of an emergency.

Building on the National Principles for Disaster Recovery, the guiding principles underpinning the Sub-Plan emphasise the ACT Government's responsibility to work with the community, focusing on building on the resilience and sense of community already in the Territory.

These principles are:

a. recovery decisions are made with an understanding of the risk context

b. recovery activities should be seamless across government

c. recovery is a shared responsibility

d. recovery builds on community strengths.

The ACT Government, through the ACT Recovery Committee, is responsible for the coordination of relief and recovery services across the Territory. Membership of the Committee comprises directorate and agency officials representing, but not limited to, the various domains of recovery.

The ACT is better prepared than ever for bushfire recovery.

The ACT Recovery Sub-Plan considers the impacts of an emergency on the community across the social, built, economic and natural environment, which depend on how the emergency impacts the community and the extent to which it does. Informed by contemporary practice, a number of supporting policies and procedure documents sit underneath the Sub-Plan, including the ACT Disaster Assistance Guidelines, ACT Evacuation Policy and ACT Emergency Recovery Toolkit.

The ACT is better prepared than ever for bushfire recovery. This is strengthened by the establishment of rapid damage assessment multidisciplinary teams, enhanced capability through interstate deployments during disaster recovery operations, and operational training exercises involving ACT response and recovery agencies.

Burned Area Assessment Teams are multidisciplinary. They undertake rapid risk assessment of impacted areas following bushfires of significance. The teams are made up of specialists from a wide range of areas, including community, culture, geographic information systems, ecology, forestry, soils and hydrology. The final makeup of a team varies with the issues at risk and location requirements.

Rapid risk assessments are conducted to identify actions that can minimise further threat to life and property, infrastructure, water quality and the environment. The Burned Area Assessment Team generally works alongside local fire managers and key stakeholders. They produce a detailed and fully costed report recommending immediate strategies for risk mitigation, including emergency stabilisation measures, and recovery actions to be implemented over a longer timeframe.

STRATEGIES

Long-term recovery begins and ends in the community. Recovery following a bushfire (or any emergency) is a far-reaching, multi-dimensional process that stretches beyond simply replacing what has been destroyed or rebuilding lives. 'Successful recovery recognises, supports and builds on individual, community and organisational capacity and resilience.'.[10] *Objective 3: A community that is prepared for bushfires.*

The ACT Recovery Sub-Plan (2019) outlines recovery activities for the for community, business, infrastructure and environment. The plan:

- outlines the framework that supports the planned, coordinated and flexible engagement of key stakeholders before, during and after emergencies
- enables scalable options to support the management of smaller incidents through to activities requiring cross-agency coordination
- set out a measured transition plan to ensure the recovery effort is effectively coordinated
- provide for the appointment of a Recovery Coordinator and Recovery Taskforce, if required (the Recovery Taskforce will plan for the transition of formal recovery arrangements to standard government arrangements).

Ongoing social capital investment by the ACT Government, including the sustained involvement of the corporate, business and community sector, will build on the solid foundations and networks in the community that promote resilience and aid recovery. Community organisations, such as the Conservation Council, Canberra Business Chamber and the ACT Council of Social Services will play important roles in bushfire recovery in the ACT.

The ACT Government continues to learn from recovery processes within the Territory and in other jurisdictions to inform recovery strategies.

The ACT Government will continue to support the post-fire rapid risk assessment approach. Early recovery actions are known to improve long-term outcomes for the community and environment, including protected areas, species, water catchment, habitat and areas of cultural and heritage importance to traditional custodians.

The ACT Government's long-term vision is to move towards having a Burned Area Assessment Team capacity as a national resource enabling consistently trained resources to be available across jurisdictional boundaries. The focus on using Burned Area Assessment Team resources on rapid post-fire recovery has been expanded to other disasters as the skills and process are equally relevant in post-flooding events.

ACTIONS	
12.1	Provide bushfire affected communities with targeted support to conduct rapid damage assessment and to assist them in rebuilding in a way that strengthens the community capacity to respond to future emergencies and enhances social, economic and environmental values where possible.
12.2	Activate the Recovery Sub-Plan as appropriate, including specific considerations for: » the impact of bushfire consequences on rural and other business enterprises » immediate support arrangements and assistance measures for those affected by bushfires, recognising the different needs of individuals or groups » rapid assessment of the risks following high intensity bushfires to minimise further threat to life and property, infrastructure and the environment.
12.3	Identify lessons learned through the recovery process in the ACT and from other jurisdictions and use them to inform managers of future recovery processes.
12.4	Continue to support the post fire Burned Area Assessment Team rapid environmental risk assessment approach for the recovery of the natural environment and cultural sites, including: » support for the development of the rapid environmental risk assessment approach to consider all hazards, including floods » support for the development of a national resource with a consistent national approach to rapid environmental risk assessment.

10 National Principles for Disaster Recovery, https://knowledge.aidr.org.au/resources/national-principles-disaster-recovery/

LEARNING FROM THE QUEENSLAND BUSHFIRES

The large wildfires in Queensland in December 2018 burnt into natural areas at a high intensity that removed vegetation and ground cover, elevating the risk of soil and debris movement leading into the summer cyclone season. To assist in the assessment of the environmental risks posed by the changed conditions after the fire, two post fire risk assessment teams, comprising personnel from NSW, Victoria and the ACT, were deployed. Skilled in vegetation, fauna, soils, natural heritage and other specialist areas, these teams were deployed to the Agnes Waters region to develop a recovery plan for Deepwater and Eurimbula National Park.

The team worked with local land management staff to compile information and report on the potential risks across the burned area, considering aspects such as:

- impacted trees and infrastructure and risks to public safety
- burnt vegetation and increased risks due to debris flow and soil erosion
- threatened species and communities and potential impacts on habitats
- cultural and natural assets that may need protection in the post fire environment.

This deployment was highly successful and demonstrated the benefit of drawing experts from across the three jurisdictions. The report and prioritised recommendations assisted with the management of immediate impacts and will assist with the longer term recovery of these areas.

The two post fire risk assessment reports have been used by local park management staff to prevent further impacts. The expertise shared with Queensland Parks and Wildlife Service has already been applied to other affected parks, such as Mount Etna Caves National Park. The post fire assessment reports were also invaluable in informing the State Disaster Recovery Coordinator in developing the *Central Queensland Disaster Recovery Plan.*

Post fire Queensland December 2018. (Photo: Melinda Laidlaw)

ABBREVIATIONS AND ACRONYMS

ACTmapi	ACT Interactive Maps at www.actmapi.act.gov.au
BAL	Bushfire Attack Level
BAZ	Bushfire Abatement Zone
BOP	Bushfire Operational Plan
BPA	Bushfire Prone Area
CSIRO	Commonwealth Scientific and Industrial Research Organisation
ESA	ACT Emergency Services Agency
EPSDD	ACT Environment, Planning and Sustainable Development Directorate
F&R	Fire & Rescue
IMT	Incident Management Team
MOU	Memorandum of Understanding
NSW	New South Wales
PCS	Parks and Conservation Service
RAFT	Remote Area Firefighting Team
RFMP	Regional Fire Management Plan
RFS	Rural Fire Service
SBMP	Strategic Bushfire Management Plan
SFAZ	Strategic Firefighting Advantage Zone
SIG	Specialist Intelligence Gathering